TEXAS DEPARTMENT OF TRANSPORTATION

Texas Rail System Plan

October 2005

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1.0 - Introduction

The Texas Rail System Plan (TRSP) was initiated in response to the increasing involvement by the state of Texas in freight and passenger rail issues, and to provide a baseline analysis of the current rail system in the state. The rapid economic growth of the state has resulted in ever-increasing freight volumes through the state's water ports, on the Texas rail system and along Texas highways. The TRSP serves to identify current and proposed rail projects, determine infrastructure and capacity needs on the Texas rail system, and develop an awareness of the issues and processes by which to address rail infrastructure needs by transportation policy makers. Policy makers, planners and the public need to understand how the rail system fits into the overall statewide transportation system. This will allow them to incorporate rail transportation system improvements into their long-range planning processes in order to improve regional and statewide safety and mobility.

1.1 - Purpose

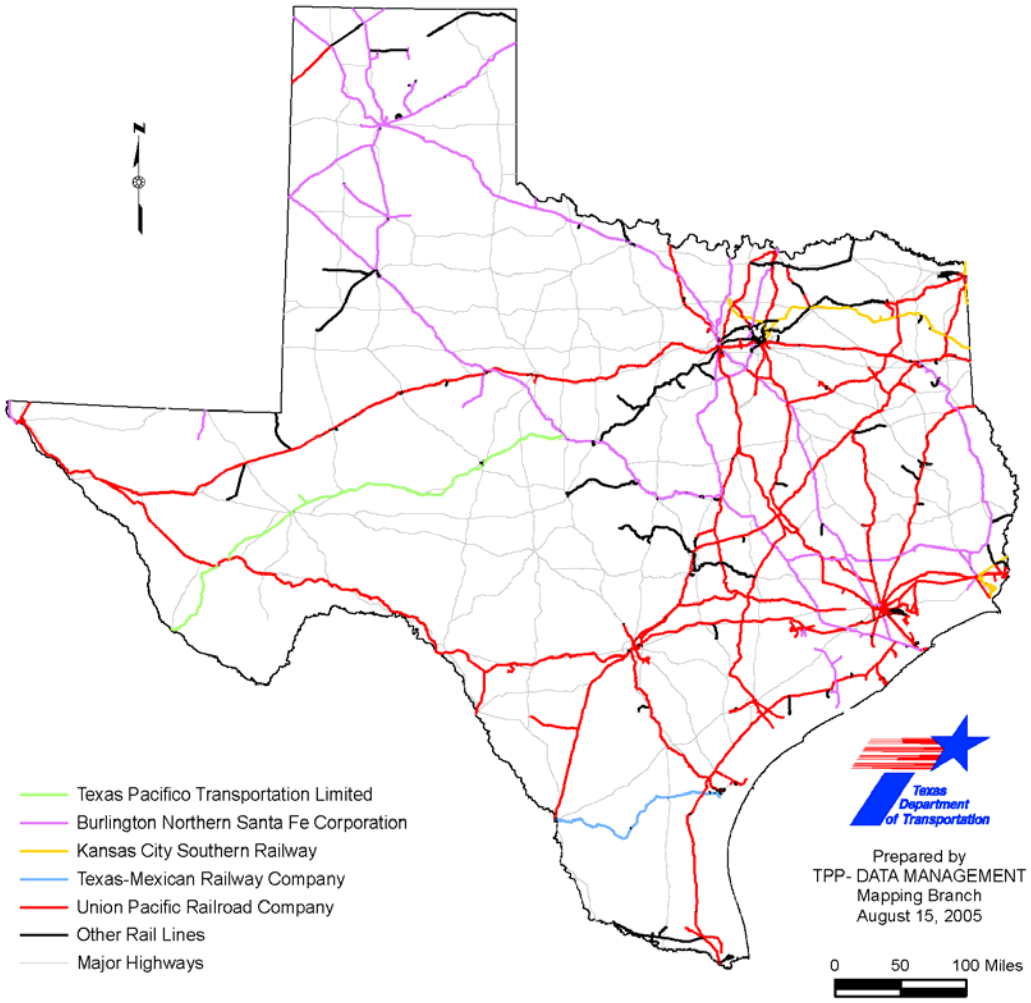
The mission of the Texas Department of Transportation (TxDOT) is to provide safe, effective and efficient movement of people and goods. TxDOT fulfills its mission by focusing on five objectives:[1]

- Reliable Mobility
- Improved Safety
- System Preservation
- Accelerated Project Delivery
- Economic Vitality

To address these objectives, TxDOT has established five fundamental strategies for carrying out its mission. They are:

- Plan It
- Build It
- Use It
- Maintain It
- Manage It

Fig. 1.1 Texas Rail Lines and Major Highways



Specific purposes of the TRSP will be to:

- Implement statewide rail transportation elements of TxDOT's annual operating budget;
- Provide documentation of the Texas rail planning process to various branches of the Federal Department of Transportation when national resources are sought for Texas rail projects;

- Serve to help identify transportation partnership opportunities between public and private sectors; and
- Assist transportation planners in understanding the role of the railroad system in the movement of people and goods, and the impact it has upon the transportation system as a whole.

1.2 - Plan It

The Surface Transportation Board (STB) categorizes rail carriers into three classes based upon annual earnings. In Texas the Class I railroads are the Burlington Northern Santa Fe Railway (BNSF), the Kansas City Southern Railway (KCS) and the Union Pacific Railroad (UP); the Class II or regional railroad is the Texas Mexican Railway (TexMex); and the remainder of the state's railroads are considered Class III or "short lines", who often engage in specialized services to provide connecting service between local shippers and the national Class I railroad system (Figure 1.1).

Rail Planning and Development

Railroads contribute significantly to the Texas economy via employment, retirement pensions, freight movement, and passenger services that benefit tourism and economic development. Economic development stimulates transportation demand by creating new jobs, new businesses, and business expansions. Policies and programs that encourage successful operations of the freight and passenger rail systems in Texas will benefit the economic vitality of the state. TxDOT will focus on specific rail improvements that will enhance public safety, mobility and efficiency which will benefit the state's multimodal transportation system.

TxDOT's rail program will key on the most significant current issues facing Texas rail and transportation providers:

- Safety
- Freight efficiencies
- Congestion relief
- Corridor availability

TxDOT will examine those issues and develop a rail program based on the determination of the most cost effective public benefits and opportunities to pursue. Through the use of public-private partnering arrangements and statewide policies TxDOT seeks to make long-term, statewide, multimodal transportation improvements that will provide safe, effective and efficient movement of people and goods.

Program Delivery Methods

TxDOT's immediate rail program is focused on improving rail freight efficiencies, optimizing the public benefits of rail transportation projects, and preserving transportation corridors for future services and connectivity to future facilities. As such the program relies on:

- New legislative tools;
- Potential Trans-Texas Corridor development; and
- Potential public benefits of public-private partnerships with freight railroads to relocate through freight traffic in key areas of the state.

The 78th and 79th Texas Legislatures passed legislation that enhances TxDOT's ability to improve transportation safety and infrastructure in Texas. The major rail issues addressed by this legislation[2] are:

- TxDOT assumes all powers and duties related to railroads from the Texas Railroad Commission;
- TxDOT will be allowed to acquire, finance, construct, maintain and operate freight or passenger rail;
- TxDOT will administer most federal funding used on construction or maintenance of rail infrastructure[3];
- TxDOT may enter into Comprehensive Development Agreements for rail projects; and
- TxDOT may enter into agreements with public or private entities using pass-through fares for reimbursement of facility expenses.

This new legislation will increase TxDOT's involvement in rail projects and the further development of the state's multimodal transportation system via proposed new systems and railroad relocation projects.

The Trans-Texas Corridor (TTC) is a proposed multi-use, statewide network of transportation routes in Texas that will incorporate existing and new highways, railways and utility corridors. A detailed discussion on the status and plans for TTC development are included in Chapter 5.

Freight railroad relocation projects to optimize safety and system efficiencies are being actively discussed and negotiated between a governor's transportation task force, TxDOT and some of the Class I railroads. It is hoped that negotiated agreements will assist the department with statewide freight rail study efforts aimed at examining key transportation corridors whose safety and mobility might be significantly improved to:

- Relieve heavily populated urban areas of freight related gridlock;

- Possibly open corridors for passenger rail development or other modal facilities;
- Reduce or eliminate highway-rail crossing conflicts; and
- Create mutually beneficial solutions for both the public and private sectors through improved efficiencies.

By understanding the capacity and operational constraints of the existing freight systems, TxDOT can formulate a rail program that will enhance mobility and improve safety on the state transportation system. In this manner, the state should be able to facilitate regional and intercity passenger rail development and improvements.

Passenger Rail Development

An in depth analysis of Texas passenger rail systems is contained in Chapter 3. Passenger rail systems in Texas are defined as intercity and commuter rail services contributing to a multimodal strategy by providing people with choices for completing their travel needs. Passenger rail service in Texas is currently provided at the regional/intercity level by the National Railroad Passenger Corporation (Amtrak) and at the commuter level by Dallas Area Rapid Transit (DART) and Fort Worth Transportation Authority (the "T"). TxDOT's rail planning program will key on system improvements that will open the door for:

- Commuter rail systems development or expansion;
- Intercity rail service improvements; and
- High speed rail corridor development

There are also two light rail systems owned and operated by transit agencies in the Dallas-Fort Worth and Houston urban areas. Any passenger rail systems developed or improved at the state or regional level should also provide reasonable and efficient, or "seamless" connectivity with metropolitan transit systems at their stations.

The TRSP can be utilized in conjunction with other state agencies and private sector programs. It is envisioned to be a fluid, frequently updated instrument which can assist with the development and implementation of a statewide rail program. The resulting program should ensure the proper maintenance, safety, rehabilitation and expansion of the Texas rail system in order to provide continual and effective responses to Texan's mobility needs.

1.3 – Build and Maintain It

As the state's transportation agency, TxDOT provides for the coordination and development of state rail planning documents and the performance of special studies to address:

- Capital and maintenance investments;
- Freight and passenger system needs; and
- Rail safety needs.

Rail abandonments in Texas have led to the loss of viable transportation options. These losses have had a negative economic impact on many rural communities and resulted in increased rail traffic on the remaining system that have led to serious safety concerns.

To help address rail infrastructure needs and constraints in the state, TxDOT has initiated freight corridor studies to identify freight capacity and infrastructure needs in specific areas or regions, including the determination of alternative modes or alignments to improve freight efficiencies. There are many rail infrastructure projects in Texas vying for available resources for freight, passenger and intermodal improvements. These projects are discussed in Chapter 5.

1.4 – Use and Manage It

The primary functions of the statewide rail-planning program are to:

- Enhance mobility and safety through improvements to the Texas rail system;
- Maintain essential rail services;
- Promote connectivity between different modes of transportation; and
- Preserve facilities and corridors for other future transportation uses.

To support these functions, TxDOT will:

- Evaluate lines proposed for abandonment and determine their future transportation value;
- Identify freight inefficiencies and propose solutions;
- Coordinate funding to acquire, rehabilitate or promote new facility construction; and
- Evaluate multimodal opportunities.

The state rail planning process concentrates on local and system-wide rail considerations. Planning for branch line acquisitions is often a reaction to retain rail service at the local level due to potential rail abandonment. System-wide planning processes take a much broader view of rail operations in the state, treating the rail system as a component of the overall transportation network.

The TRSP and the rail planning process can be used to identify, evaluate, develop and implement specific projects throughout the state according to the plan objectives outlined in Table 1.1.

Table 1.1 Texas Rail System Plan Objectives and Actions

OBJECTIVES:	ACTIONS:
Reliable Mobility	• Assist local and regional efforts to expand or implement passenger rail systems as a transportation alternative.
	• Determine the benefits of utilizing rail transport to reduce Vehicular Miles Traveled (VMT).
	• Encourage public involvement in rail issues and rail system development to assure awareness of the benefits of rail transportation for goods and people.
Improved Safety	• Determine key rail corridors where through freight rail services can be relocated or improved to ensure safety of large urban populations from hazardous materials shipments.
	• Partner with communities, railroads and rail safety inspectors to ensure the safety and integrity of the rail system of Texas.
	• Emphasize public education regarding safety at rail-highway crossings.
	• Maintain, evaluate and upgrade grade crossings on the state highway system.
System Preservation	• Analyze specific freight and transportation corridors in the state to identify freight bottlenecks and determine possible multimodal alternatives that will improve freight flows.
	• Assist rail freight carriers in maintaining or improving services in specific corridors through applicable federal and state programs.
	• Encourage rail preservation by Rural Rail Transportation Districts (RRTDs) and provide evaluation, analysis, and assistance with RRTD programs.
	• Support ports, rail carriers and intermodal facilities with access and infrastructure issues wherever possible.
	• Create local awareness of rail issues and rail benefits. Work with metropolitan areas to develop rail studies, programs, and funding sources.
Economic Vitality	• Continue the development of the Trans-Texas Corridor, through coordination with other agencies as well as development of public/private partnerships to finance, build, and operate the corridor.
	• Work with railroads to evaluate, improve and expand services as appropriate.
	• Promote continued development of rail connections through monitoring and evaluating freight rail traffic flows and connectivity.

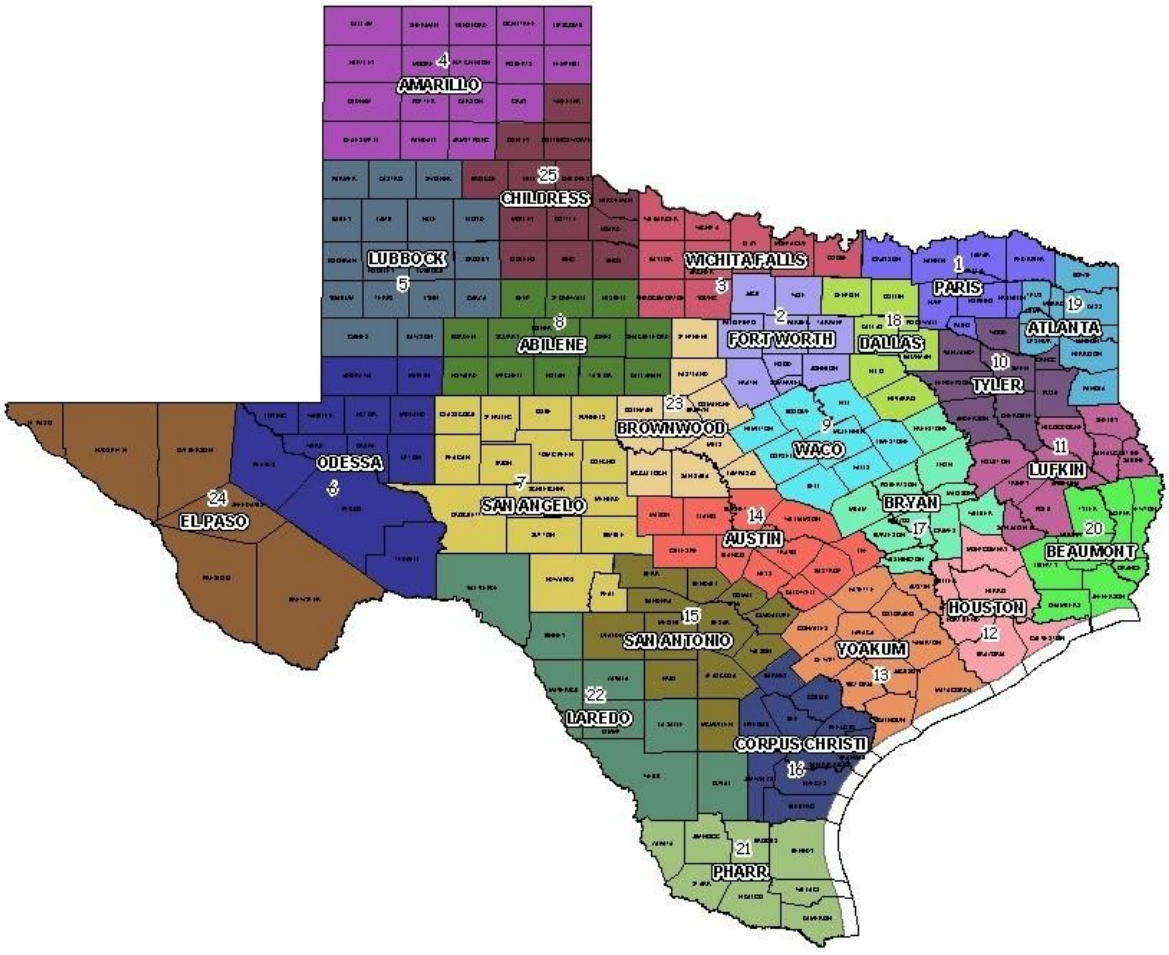
Funding for rail projects in Texas prior to the passage of HB 3588 and HB 2702 was limited to specific appropriations. Passage of these bills and HB 1546 has enabled the expenditure of non-dedicated funds for state-owned rail projects as well as funds from

other sources, such as loans and grants. HB 1546 creates the possibility of establishing a dedicated regional rail relocation fund if this constitutional amendment is approved by voters in November, 2005. This legislation would allow TxDOT to improve statewide transportation system safety and efficiency through targeted improvements to the Texas rail system.

1.5 – TxDOT Districts

Fig. 1.2 shows the geographical breakdown of TxDOT's 25 districts. The districts are responsible for transportation development, including transportation planning, design, right-of-way acquisition, construction oversight and maintenance in each region. District

Fig. 1.2 TxDOT Districts



staff, led by the TxDOT District Engineer, are familiar with the unique demands and local needs in their areas of responsibility. All 254 of the state's counties are assigned to one of the districts. Districts are further subdivided into area engineer offices and maintenance offices. Through this structure, TxDOT district offices offer local access to citizens who want to participate in the transportation development process. The district's Public Information Offices serve as a point of contact for citizens and the news media.

For purposes of the TRSP, several issues pertaining to rail transportation may be analyzed at the TxDOT district level based upon a classification of the district as either a metropolitan district or a non-metropolitan district. Metropolitan districts are defined as those that have one of the states' major metropolitan areas within their boundary. Further explanations of rail issues in specific TxDOT districts are included in Chapter 2.

TxDOT's Role in Local and Regional Rail Planning

The primary functions of both TxDOT district personnel and local and regional government agencies involved with rail planning are to monitor local rail transportation needs and, when necessary, initiate rail development projects by either working directly with the railroad or contacting the TxDOT district or division rail planning staff for assistance and/or guidance. The evaluation and initiation of state purchases of faltering rail lines to protect area economies and preserve transportation alternatives begins with local citizen involvement. Additionally, local and regional governments serve as the "eyes and ears" for the implementation of improved safety measures for their highway-rail grade crossings. Through their efforts, recommended improvements to the local highway/railroad crossings can be executed to enhance the quality of life in their area.

1.6 – Meeting the Challenge

The state rail plan documents consist of a stand alone Texas Rail System Plan Summary, and the Texas Rail System Plan (TRSP). The TRSP Summary was developed at the direction of the Texas Transportation Commission (Commission). The detailed TRSP is a comprehensive document that addresses the railroad system of Texas, and is structured according to federal guidelines. Both documents are available on-line at the TxDOT web-site, or by contacting the Multimodal Section of the Transportation Planning and Programming Division of TxDOT.

The remaining TRSP chapters are organized as follows:

- Chapter 2 – Freight Rail, gives an in depth analysis of state freight rail issues and infrastructure needs.
- Chapter 3 – Passenger Rail, outlines Texas' passenger rail systems, describing current and proposed interstate and intercity services, as well as commuter and light rail operations.

- Chapter 4 – Rail Safety, rail/highway grade crossing safety statistics and public safety issues are described in this chapter along with programs and initiatives to address rail and public safety.
- Chapter 5 – Future Directions, lists studies and proposed projects around the state with the potential to improve both the Texas rail system and the overall transportation system.
- Chapter 6 - Program Delivery, discusses the potential funding sources and tools available for rail improvements.
- Chapter 7 – Conclusion, summarizes major points of the document and gives brief recommendations for the ongoing analysis and updating of the rail system plan.

The TRSP will be an integral part of the overall statewide transportation planning process. Rapid increases in population and commodity flows into and through Texas are prompting the State to determine how enhancement of the rail system can create a balanced transportation system that provides choices for moving people and goods.

TxDOT's rail planning process will include coordinating efforts between the department and multiple entities, such as regional mobility authorities (RMA's), rural rail transportation districts (RRTDs), commuter rail districts, counties, cities and metropolitan planning organizations (MPOs), and privately owned railroads. The TRSP can play an important role in both urban and rural transportation planning processes.

Rail lines, water ports and intermodal facilities are a critical component of the Texas multimodal transportation system. The transportation system not only gives Texans mobility options for access to jobs, services, and recreational activities, but also integrates Texas businesses into the worldwide economy. The state's economy depends, either directly or indirectly, on the efficiency of the entire transportation system. Improvements made to Texas rail infrastructure will enhance the safety, security, economic stability and environmental quality of all Texans.

TxDOT may accomplish system-wide improvements by entering into public-private partnership agreements to provide investments in freight rail relocation projects, rail facility improvements, rail line consolidations, or new passenger rail or intermodal facility developments. Numerous examples around the country have proven this type of strategy for transportation system improvements can be successful. According to a report on the state of the national rail system, "relatively small public investments in the nation's freight railroads can be leveraged into rather large public benefits for highway infrastructure, highway users and freight shippers."[4]

[1] Texas Department of Transportation, Strategic Plan 2005-2009.

[2] HB 3588, 78th Texas Legislature, Regular Session and HB 2702, 79th Texas Legislature, Regular Session, www.capitol.state.tx.us

[3] "…Except as provided by Subsection (c), money appropriated or allocated by the United States for the construction and maintenance in this state of rail facilities owned by any public or private entity shall be administered by the commission and may be spent only under the supervision of the department."

[4] American Association of State Highway and Transportation Officials, "Freight-Rail Bottom Line Report", September, 2002.

2.0 – Freight Rail

2.1 - Overview of the Texas Freight Rail System

Nationally, over 550 freight railroads operate on approximately 142,000 miles of rail infrastructure. These railroads carry more than 40 percent of the nation's intercity freight, including 70 percent of vehicles from domestic manufacturers, 64 percent of the nation's coal, and 40 percent of the nation's grain.[1] The Texas rail system represents a significant component of the national network, in both size and traffic levels. Table 2.1 shows where the Texas rail system ranks nationally for several key indicators.

Table 2.1 – Ranking Texas on Key Statistical Indicators, 2003

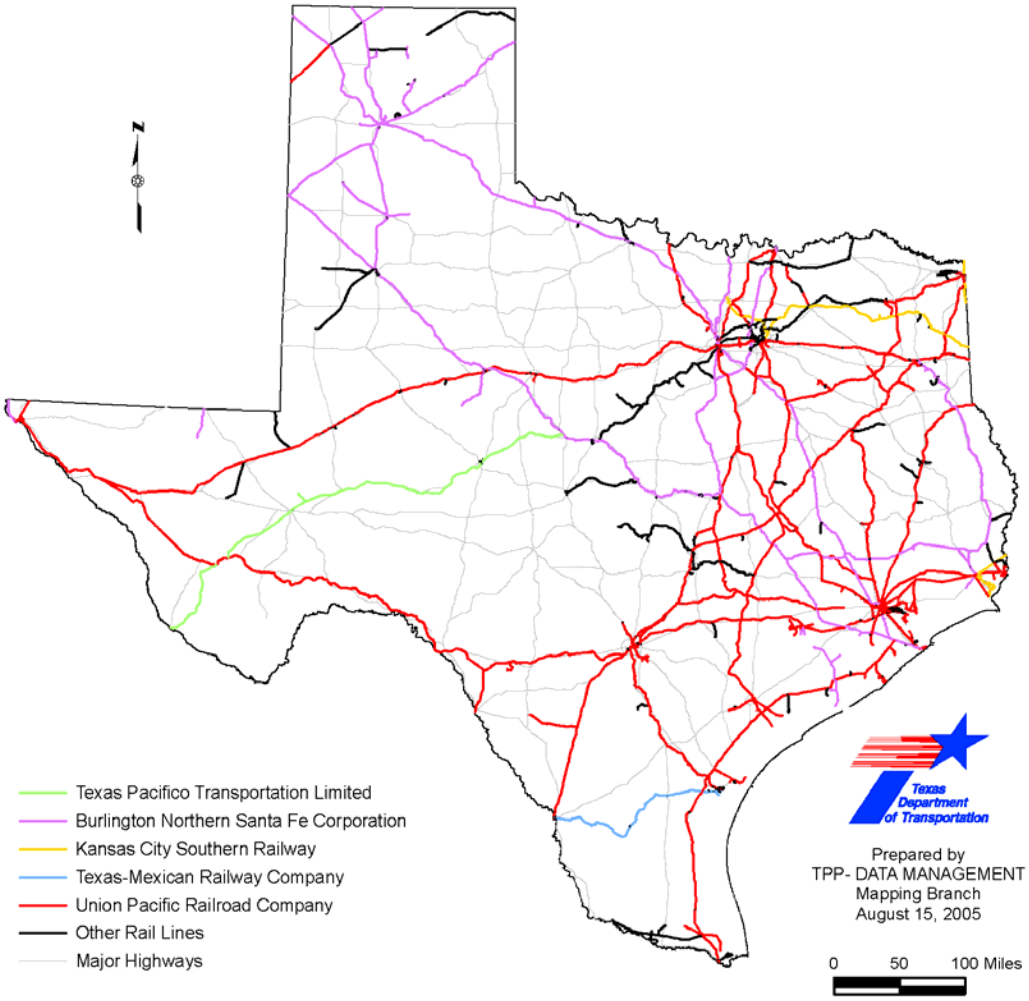
Key Indicator	Statistic	Rank
Number of Freight Railroads	44	2nd
Total Rail Miles		
Excluding Trackage Rights	10,354	1st
Including Trackage Rights	14,049	-
Total Rail Tons	335,757,329	5th
Originating	109,048,075	4th
Terminating	192,998,681	1st
Total Rail Carloads	8,315,683	2nd
Originating	2,025,181	4th
Terminating	2,939,629	3rd
Total Railroad Employment	17,858	1st
Total Wages by Rail Employees	$1,124,949,000	1st

Source: *Railroads and States – State Rankings*, Association of American Railroads, 2003.

Texas' proximity to the Gulf Coast and Mexico, combined with its agricultural and manufacturing output, and its dynamic metropolitan areas position the state as a major contributor to the movement of goods. This makes the viability of its rail freight system

highly important to the state's future strength. Figure 2.1 shows the extensive rail network traversing Texas and connecting to several seaports and U.S.-Mexico gateways.

Figure 2.1 –Texas Rail Lines and Major Highways



Source: Texas Department of Transportation, Transportation Planning and Programming Division

The purpose of the freight rail chapter is to:

1) describe the components and characteristics of the Texas freight rail system;
2) demonstrate the types and magnitudes of commodity movement performed by railroads in Texas; and,
3) denote government involvement in freight rail activity in Texas.

2.2 - Characteristics of the Texas Freight Railroad System

As indicated in Table 2.1, Texas ranks second nationally with over 40 freight railroads. Not all of these railroads represent major shippers of freight over long distances covering multiple states. That is usually reserved to the major, Class I railroads, of which Texas has three. The vast numerical majority of the railroads in the U.S. operate over shorter distances that connect local customers to the Class I networks.

The Surface Transportation Board (STB) categorizes rail carriers into three classes based upon annual earnings. The earnings limits for each class were set in 1991 and are adjusted annually for inflation. The limits below list the 2003 base limits. The three classes are:

- Class I – Gross annual operating revenues of $277.7 million or more;
- Class II – A non-Class I railroad operating 350 or more miles and/or with gross annual operating revenues between $40 million and $277.7 million; and
- Class III – gross annual operating revenues of less than $40 million

Table 2.2 categorizes the Texas rail network into the STB classifications.

Table 2.2 Freight Railroads Operating in Texas by STB Classification and Miles of Track, 2003

Railroad Classification	Number of Railroads in Texas	Miles of Track Operated	
		Excluding Trackage Rights	Including Trackage Rights
Class I	3	8,255	11,432
Class II	1	160	544
Class III	40	1,939	2,073
Total	44	10,354	14,049

Source: Railroad Statistics by State, Published by the Association of American Railroads, 2003.

The Class I railroads represent the major railroad companies moving significant amounts of freight over long distances and owning track spanning several states. Three Class I railroads serve Texas: the Burlington Northern Santa Fe Railway (BNSF), the Kansas City Southern Railway (KCS), and the Union Pacific Railroad (UP). The three Class I railroads operated on 11,432 (81 percent) of the state's total track miles in 2003. Most of that mileage is used by BNSF and UP, with 4,645 miles and 6,408 miles, respectively. Combined, BNSF and UP operate over 96 percent of the Class I track mileage in the state. The widespread coverage of BNSF and UP allows them to connect to most of the major markets statewide. By comparison, KCS operates on only 379 miles of track in the state, and is limited to connections to Dallas/Fort Worth and Beaumont from the east.

The Class II railroad presence in Texas is limited to only the Texas Mexican Railway (TexMex), which operates on 544 miles of track. The 160 miles of track between Corpus Christi and Laredo is owned by TexMex, while the remaining mileage is through trackage rights over UP between Corpus Christi and Beaumont. KCS recently purchased TexMex, as detailed later in this chapter.

The majority of railroads operating within Texas are classified as Class III railroads. Often referred to as "short lines," the Class III railroads usually engage in specialized services and are typically geographically concentrated. One characteristic of short lines is that they may be privately owned to serve only a specific company or industry. For example, the Angelina & Neches River Railroad was founded by a paper mill and now connects shippers in the Lufkin area to UP rail lines. Short lines may also be created following the purchase of track formerly controlled by Class I railroads. For example, the Gulf, Colorado & San Saba Railway operates on 67.5 miles of track in Central Texas acquired from the Atchison, Topeka and Santa Fe Railway Company (ATSF) following an abandonment proceeding.

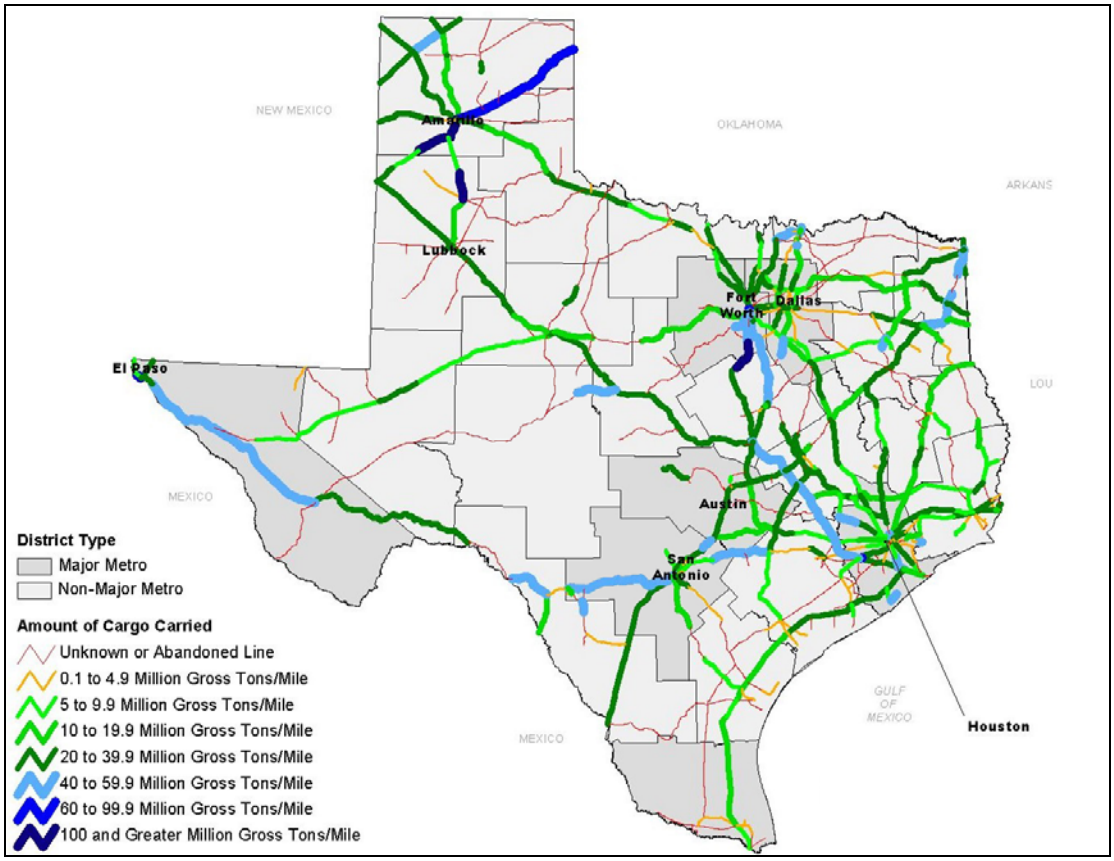
Some Texas ports, such as Houston, Corpus Christi, and Orange, are served by dedicated switching railroads (Port Terminal Railroad Association, Corpus Christi Terminal Railroad, and the Orange Port Terminal Railway, respectively) that provide rail services in close proximity to the port areas. Switching railroads, such as the Dallas, Garland & Northeastern (DGNO), operate on Class I lines or on their own track and deliver or pick up goods (e.g., limestone, farm products, plastics, lumber, soybean oil, steel, paper, chemicals, and auto parts) within the region. The DGNO serves as a switching carrier for UP in the Dallas region and interchanges rail cars to provide cross-country rail services to area shippers.

2.3 - Freight Rail Traffic Volumes, Commodities, and Tonnage

The 1990s were a period of strong economic growth in Texas, reflected in the quantity of rail freight handled in the state. In 1991, 230 million tons of rail freight were transported

in Texas. By 2003 this figure had increased to some 335 million tons – an increase of over 45 percent. Figure 2.2 depicts commodity flows by rail throughout the state.

Figure 2.2 – Statewide Rail Commodity Flows



Source: Compiled by Texas Department of Transportation, Transportation Planning and Programming Division from Bureau of Transportation Statistics (BTS) data, 2000.

During the same period, the number of railcars handled in Texas grew even more quickly than the rise in tonnage, increasing from 4.1 million cars in 1991 to 8.3 million cars in 2003. The expansion of trade, especially with Mexico in the years following passage of the North American Free Trade Agreement (NAFTA) agreement, the growth of manufacturing, and a rapidly growing population all contributed to increases in rail freight shipped around the state. Table 2.3 summarizes the five most important commodity groups, in terms of tonnage, originating in Texas in 1991, 1996 and 2003, respectively.

Table 2.3 – Major Railroad Commodity Groups Originating in Texas

Commodity Group	1991		1996		2003		% Change, 1991-2003
	Tons	% Total	Tons	% Total	Tons	% Total	
Chemicals	27,558,824	32	33,568,992	33	36,409,891	33	32
Non-Metallic Minerals	17,473,657	20	20,954,179	21	26,237,218	24	50
Petroleum Products	6,112,348	7	8,317,200	8	7,875,063	7	29
Mixed Freight	6,062,817	7	7,042,740	7	7,390,516	7	22
Glass/ Stone Products	N/A	-	4,523,562	4	5,012,852	5	-
All Other	24,210,205	28	27,490,209	27	26,122,535	24	8
Total	81,417,851	100	101,896,882	100	109,048,075	100	34

Source: Railroad Statistics by State, published by the Association of American Railroads

Data from the Association of American Railroads (AAR) indicates that the volume of Class I rail freight originating in Texas between 1991 and 2003 rose from 86.5 to 109 million tons – a 34 percent increase. This growth in rail freight was led by non-metallic minerals; followed by Texas' largest manufacturing industry, chemicals. Other leading commodities shipped by rail from Texas include petroleum, mixed freight, and farm products.

During the 1990s the growth in rail freight terminating in Texas moderately outpaced the increase in rail freight originating from the state. The volume of rail freight terminating in Texas increased by over one-third, primarily due to increases in shipments of coal, non-metallic minerals, and farm products. Like coal, the growth in shipments of non-metallic minerals (e.g., stone, aggregates) and food products coincide with heightened demand for roads and food stemming from Texas' rapidly growing economy. The volume of chemical shipments terminating in Texas also grew between 1991 and 2003 as the state's chemical industries increased production following a series of large-scale investments. Freight rail shipments of chemicals terminating in Texas are exported from the state's ports to international markets or used as inputs in the production of other chemicals or manufactured goods. Table 2.4 summarizes the most important commodity groups, in terms of tonnage, terminating in Texas in 1991, 1996, and 2003.

Table 2.4 – Major Railroad Commodity Groups Terminating in Texas

Commodity Group	1991		1996		2003		% Change, 1991-2003
	Tons	% Total	Tons	% Total	Tons	% Total	
Coal	39,997,651	28	49,052,357	29	56,035,751	29	40
Non-Metallic Minerals	19,579,387	14	24,934,767	15	35,223,201	18	80
Farm Products	19,373,633	14	21,627,685	13	22,370,338	12	15
Chemicals	18,218,919	13	18,945,148	11	18,893,787	10	4
Food Products	9,782,907	7	10,010,216	6	11,476,192	6	17
All Other	33,774,473	24	43,853,394	26	48,999,412	25	45
Total	140,726,970	100	168,423,567	100	192,998,681	100	37

Source: Railroad Statistics by State, published by the Association of American Railroads

Forecasted Rail Freight Trends

The American Association of State Highway and Transportation Officials (AASHTO) recently completed their *Freight-Rail Bottom Line Report*. The report forecasts that, with a modest 3 percent annual growth in the economy, domestic freight tonnage will increase by 57 percent and import-export tonnage will increase by 100 percent by the year 2020. These increases would require the highway system to carry an additional 6,600 million tons of freight (a 62 percent increase) and the rail system an additional 888 million tons of freight (a 44 percent increase) if the modal split remains relatively the same. The report finds that there would be a shift of almost 900 million tons of freight to the highways if there is essentially no-growth in the rail system (adding an additional 31 billion Vehicle Miles Traveled [VMT] to the highways). AASHTO states that constrained investments resulting from the limited growth of the rail system from Class I investments plus borrowing would enable the rail system to handle about half of the projected increases in tonnage; resulting in the transference of almost 450 million tons of freight to the highways (adding an additional 15 billion VMT). Additionally, AASHTO stated that a higher level of investment would allow the rail system to handle the projected increases in tonnage, while aggressive investments could expand the railroad system substantially and allow the diversion of 600 million tons of freight from the highways to the rail system (removing 25 billion VMT). This last scenario could save shippers $239 billion, save highway users $397 billion, and reduce highway costs by $17 billion.

The *Freight Rail Bottom Line Report* also discusses rail safety needs, estimated at $13.8 billion; short-line railroad improvement needs, estimated at $11.8 billion; Class I railroad infrastructure and maintenance requirements, estimated at $4 to $5 billion annually; and Class I infrastructure improvements, estimated at $3.5 billion annually. These needs present a major problem to the railroad industry, which is extraordinarily

capital-intensive. Railroad companies spend approximately 5 times more to maintain rail lines and equipment than the average U.S. manufacturing industry spends on facilities and equipment; resulting in a low level of investment in railroad stocks. Railroad revenues are such that the return on investment is lower than the cost of capital, which has resulted in very limited investments or rail system expansion projects. AASHTO has therefore recommended the development of public-private partnerships between railroad companies and public entities in order to identify, plan, and construct freight rail projects that would result in expansion or improvement to the freight rail system.

In Texas, increasing vehicle volumes, expanding trade, a growing population, and a rising economy are contributing to roadway congestion and increasing safety concerns. Rail transport is considered an option for reducing road congestion through the diversion of freight from truck to rail, thereby reducing the number of trucks on Texas highways. With larger volumes of freight moving between Texas' large cities, it may be possible to divert a portion of the truck freight to rail if the capacity is available.

Table 2.5 compares the five most important commodity groupings in terms of tonnage originating in Texas in 1998 with forecasted groupings for 2010 and 2025. Chemicals and non-metallic minerals are expected to continue to dominate rail freight shipments originating in Texas, but in terms of total tons originating in the state their proportions are projected to decrease slightly. It's expected that the growth in rail freight will be led by an increase in miscellaneous mixed shipments, food and kindred products. These commodities are forecast to increase by approximately 68 percent between 1998 and 2025.

Table 2.5 – Forecasted Major Railroad Commodity Groups Originating in Texas

Commodity Group	1998		2010		2025		% Change, 1998-2025
	Tons	% Total	Tons	% Total	Tons	% Total	
Chemicals and allied products	30,215,922	36	32,876,243	34	33,116,363	29	10
Non-Metallic Minerals	17,316,126	21	20,581,945	21	22,929,955	20	32
Petroleum and coal products	6,586,451	8	6,681,311	7	6,769,516	6	3
Miscellaneous mixed products	5,781,431	7	9,192,641	10	15,494,513	14	168
Food Products	3,931,080	5	5,015,788	5	10,723,289	9	173
All Other	19,869,830	23	21,830,278	23	25,878,758	22	30
Total	83,700,840	100	91,178,206	100	114,912,394	100	37

Source: Cambridge Systematics

Table 2.6 summarizes the most important commodity types destined for Texas in 1998 and forecasted for 2010 and 2025. The volume of rail freight terminating in Texas in 1998 amounted to 149 million tons. Rail freight volumes terminating in Texas are forecast to increase to 172 million tons in 2010, and 213 million tons in 2025 - an increase of almost 44 percent. The five major commodity types in 1998 (coal, farm products, nonmetallic minerals, chemicals, and food and kindred products) are expected to continue to account for the largest share of rail freight terminating in the state in 2010 and 2025. Together these are expected to account for over half of the net increase in rail freight terminating in Texas during the period.

Table 2.6 – Forecasted Major Railroad Commodity Groups Terminating in Texas

Commodity Group	1998		2010		2025		% Change, 1998-2025
	Tons	% Total	Tons	% Total	Tons	% Total	
Coal	45,532,251	31	43,141,158	25	41,694,485	20	9
Farm Products	22,019,811	15	25,499,798	15	28,129,767	13	22
Nonmetallic minerals	19,555,892	13	24,262,044	14	28,587,934	13	32
Chemicals and allied products	16,245,866	11	20,549,203	12	25,576,749	12	37
Food Products	9,090,486	6	12,149,591	7	24,474,574	12	63
Miscellaneous mixed products	6,289,163	4	8,844,683	5	13,631,982	6	54
Clay, concrete, glass, stone	N/A	-	6,376,462	4	10,728,793	5	100
All Other	30,077,692	20	31,408,257	18	40,880,541	19	26
Total	148,811,161	100	172,231,196	100	213,704,825	100	43

Source: Cambridge Systematics

2.4 - Rail System Characteristics by TxDOT District

Each TxDOT district is served by at least one Class I rail carrier. The Houston, Dallas, and Fort Worth districts are provided rail service by all three Class I carriers (UP, BNSF, KCS) that operate in Texas. The El Paso, Austin, and Pharr Districts each have services from two Class I carriers, the UP and BNSF railroads, while the San Antonio district only has service from UP and trackage rights for BNSF.

Within the BNSF system, Fort Worth lies on a heavily traveled line connecting coal from Wyoming's Powder River Basin with Central Texas and the Houston area. Also entering Fort Worth is a busy line originating in the grain-producing Plains states and then

proceeding to Texas Gulf Coast Ports. These BNSF lines each carried more than 33 million gross tons (MGT) of freight in 2000. The BNSF's Transcontinental Line traverses the Texas Panhandle carrying over 100 MGT each way in 2000, from Los Angeles to Chicago. Within the UP system, Dallas, Fort Worth, Austin, and San Antonio are each on the heavily used rail corridor connecting Laredo with the Upper Midwest. Houston is an UP hub for six lines, linking the region with the Louisiana Gulf Coast, Midwest, West Coast, and Mexico. El Paso, San Antonio, Dallas, and Fort Worth are also on main east-west corridors going across the southern tier of the United States.

Other major lines include BNSF's main coal carrying line from the Powder River Basin in Wyoming to the Houston area, and UP's high volume major east-west lines that connect California with the Gulf Coast and Memphis, and their north-south NAFTA corridor connecting Mexico to the northeast United States and Canada.

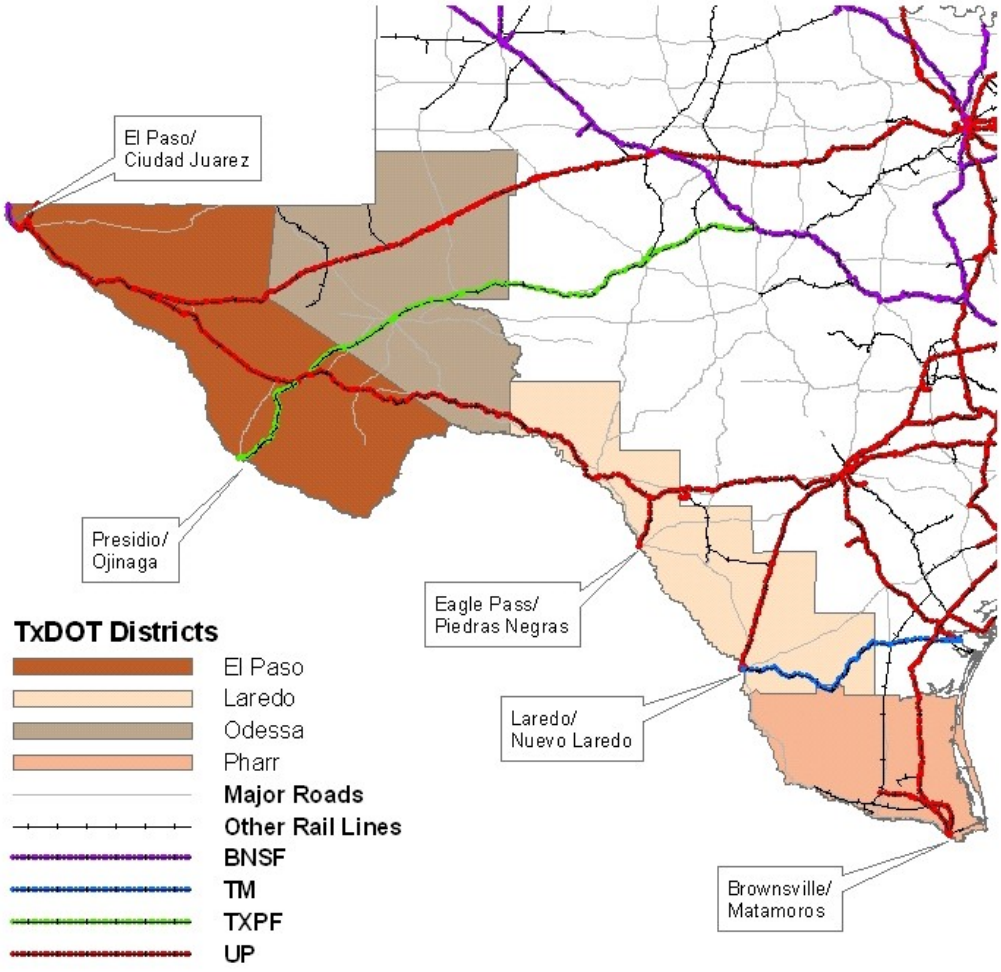
Rail Systems in International Border Districts

Five of the seven locations for rail traffic to cross the U.S.-Mexico border are in Texas. These international rail gateways are in Brownsville, Laredo, Eagle Pass, Presidio, and El Paso. Each of these five gateways can transport rail freight over the Rio Grande by way of single-track bridges, with the exception of El Paso, which has two rail bridges. The other two international rail crossings traverse the border in Nogales (Arizona) and Calexico (California). Figure 2.3 displays the Texas-Mexico rail crossings.

With the exception of Presidio, all the Texas-Mexico crossings are served by at least one Class I railroad. The UP contains the largest presence by having rail crossings in Brownsville, Laredo, Eagle Pass, and El Paso. The BNSF railroad connects at El Paso with its own bridge and at Brownsville and Eagle Pass with trackage rights over the UP lines. Laredo is also served by TexMex, the State's only Class II operator.

The remaining crossing at Presidio is functional, but has only seen limited use since July 1998 when regular operations over the western end of the line were allowed to be discontinued by the Surface Transportation Board (STB). This crossing is part of the South Orient line, which was purchased by the State of Texas in order to prevent the line's abandonment. The line is currently being operated by Texas Pacifico Transportation (TXPF). TXPF resumed limited operations over the border at Presidio in March 2005. Additional information about this rail line and crossing is included later in Chapter 5.

Figure 2.3 – Texas/Mexico Rail Border Crossings and Border Districts



The two Mexican railroads connecting to the Texas gateways are TFM (Transportacion Ferroviaria Mexicana) and Ferromex (Ferrocarril Mexicano). The following table (Table 2.7) provides a listing of the connecting railroads at each border crossing. Also included is the TxDOT district in which the crossings are located.

Table 2.7 – Texas-Mexico Border Gateways and Railroad Connections

District	Border Crossing		Connecting Railroads	
	Texas	Mexico	Texas	Mexico
Pharr	Brownsville	Matamoros	UP, *BNSF	TFM
Laredo	Laredo	Nuevo Laredo	UP, TexMex	TFM
	Eagle Pass	Piedras Negras	UP, *BNSF	Ferromex
El Paso	Presidio	Ojinaga	TXPF	Ferromex
	El Paso	Cd. Juarez	UP, BNSF	Ferromex

* Through trackage rights

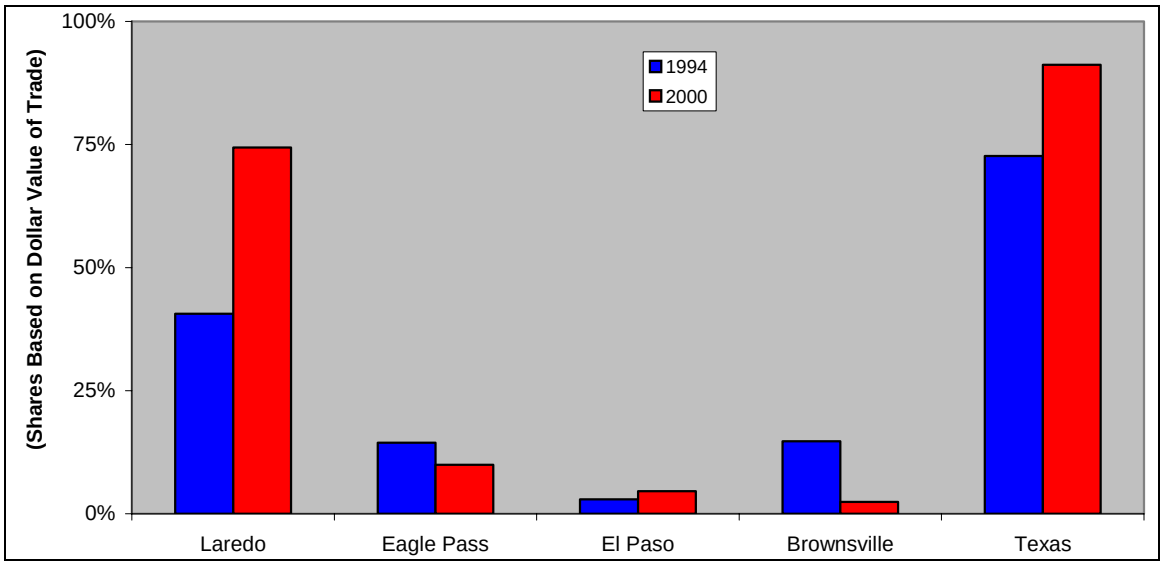
Source: "The Impact of Mexican Rail Privatization on the Texas Transportation System", Texas Transportation Institute, 2001.

International Rail Freight Traffic Levels

The advent of the NAFTA on January 1, 1994 pushed already increasing trade levels between the U.S. and Mexico to incredibly high levels. Between 1994 and 2000, total U.S. surface trade with Mexico rose from $90.1 billion to $210.6 billion — a 134 percent increase. The gain in overall surface trade was led by imports from Mexico, which grew by 160 percent. Although trucks are the dominant mode of transportation for U.S. trade with Mexico, the amount of rail freight and its importance to the overall transportation system has also grown significantly since 1994.

With its extensive transportation network and connections with Mexico, Texas has become the center of international trade between the U.S. and Mexico. Rail is a major contributor to the movement of freight between the two countries. Combined, the Texas border crossings at Laredo, Brownsville, Eagle Pass, and El Paso accounted for 90 percent of the value of U.S.-Mexico rail traffic in 2000 (See Figure 2.4). While the dollar value of rail freight processed at Eagle Pass and Brownsville declined, Laredo's growth far surpassed these declines. Perhaps more noteworthy, Laredo's share of U.S.-Mexico rail traffic (in terms of dollar value) grew from 41 percent of the U.S. total in 1994 to 74 percent in 2000. Rail traffic at Laredo accounted for the majority of the increase in rail car volumes. Between 1993 and 2000 the volume of loaded rail cars handled in Laredo increased by 130 percent.

Figure 2.4 – U.S.-Mexico Trade Shipments by Rail at Texas Border Crossings (1994-2000)

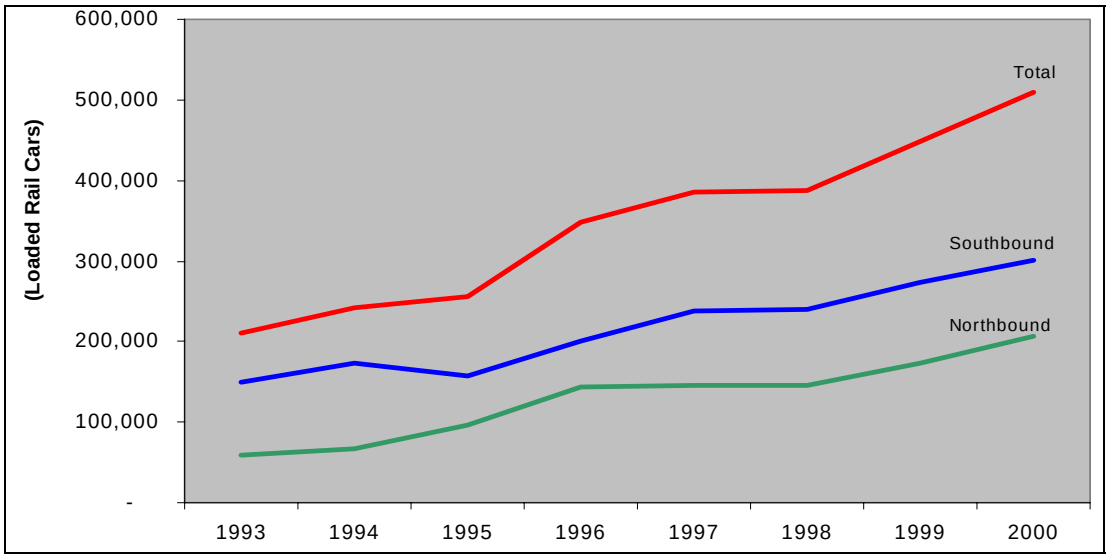


Source: Bureau of Transportation Statistics, Transborder Surface Freight Data.

While the total volume of rail cars crossing at the U.S.-Mexico border is increasing, on average only about 30 percent of the goods moving between the four border ports were from Texas or destined for Texas. Thus, the growth in U.S.-Mexico trade and the emerging concentration of North American manufacturing in Mexico is creating a more intensive use of Texas rail, both at the border crossings as well as throughout the state.

Figure 2.5 shows that the rail car volumes at Texas border railroad crossings more than doubled, from 1994 to 2000. The graph depicts major increases in the number of rail cars transported after the inception of NAFTA and the privatization of the Mexican rail system, which began in 1997 and was fully implemented in 1998.

Figure 2.5 – Total Loaded Rail Cars Through Texas Border Crossings, 1993-2000

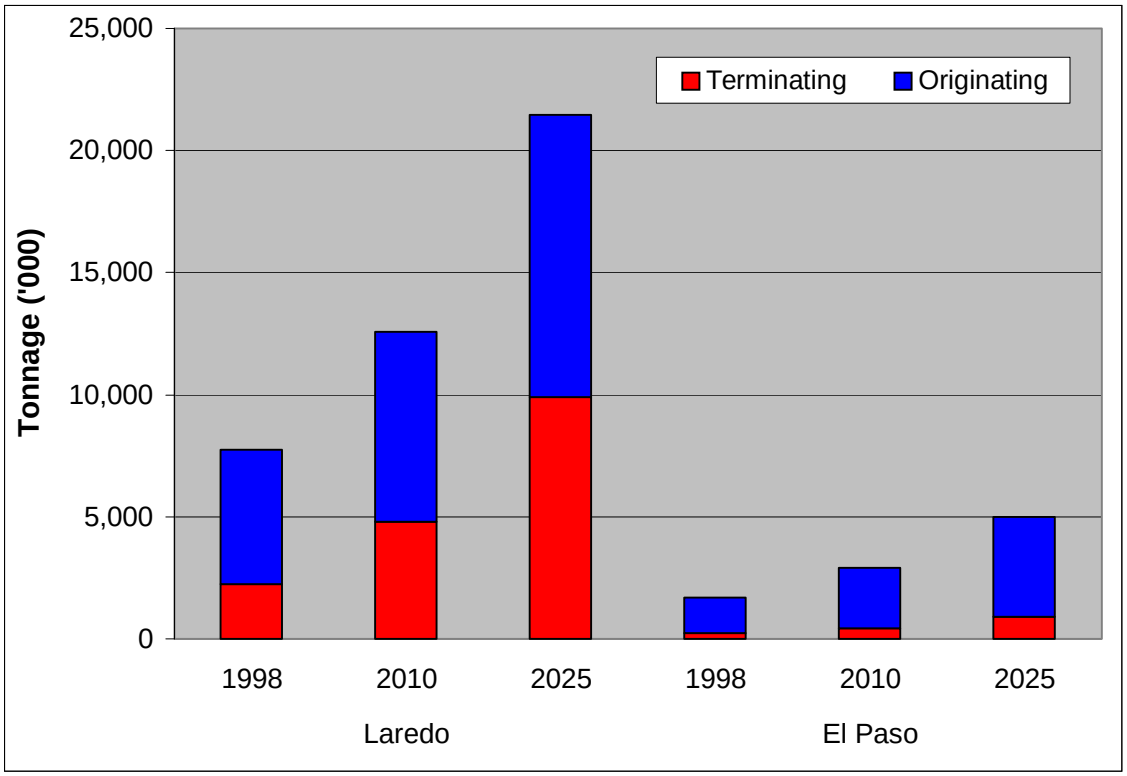


Source: Texas A&M International University, Laredo, Texas

Forecasted International Rail Freight

AASHTO's *Freight Rail Bottom Line Report* indicates that, nationally, import and export freight with other countries throughout the world will increase 100 percent by the year 2020. Driven by NAFTA, international trade flows between the U.S. and Mexico are expected to increase, almost tripling rail freight tonnage crossing the Texas-Mexico border between 1998 and 2025. Rail trade flows between Texas and Mexico through Laredo are expected to increase by almost 14 million tons between 1998 and 2025, representing an increase of more than 177 percent. The increase through El Paso is forecasted to increase from 1.7 million tons in 1998 to almost 5 million tons in 2025, representing an increase of more than 196 percent. Figure 2.6 shows the expected rail volumes at these two TxDOT border districts. Increasing trade with Mexico will thus continue to put pressure on the transportation corridors and crossings located within each district.[2]

Figure 2.6 – Forecasted Texas-Mexico Rail Volumes at International Border Districts (1998 – 2025)



Source: DRI-WEFA

2.5 - Rail Systems in Texas Ports

The Texas Gulf Coast comprises some of the nation's busiest rail hubs thanks to a combination of marine shipping, manufacturing, refineries, and a large population base. Houston represents one of the busiest ports in the country while Corpus Christi, Texas City and Beaumont each are also nationally significant. The Texas Gulf Coast includes industry concentrations in machinery, chemicals and petroleum refining, and is one of the country's largest population centers.

Ship traffic is a stimulus for rail growth and most Texas ports experienced significant increases in the amount of tonnage handled between 1990 and 2000 (see Table 2.8).

Table 2.8 – Tonnage Handled by Texas Ports, 1990-2000

Port	1990	2000	% Change
Houston	126,178,000	191,419,000	52
Corpus Christi	60,165,000	82,973,000	38
Texas City	48,052,000	61,586,000	28
Beaumont	26,729,000	82,653,000	209
Port Arthur	30,681,000	21,387,000	-31
Freeport	14,526,000	30,985,000	113
Galveston	9,620,000	10,643,000	10
Brownsville	1,372,000	3,268,000	138
Port Lavaca	5,097,000	10,552,000	107

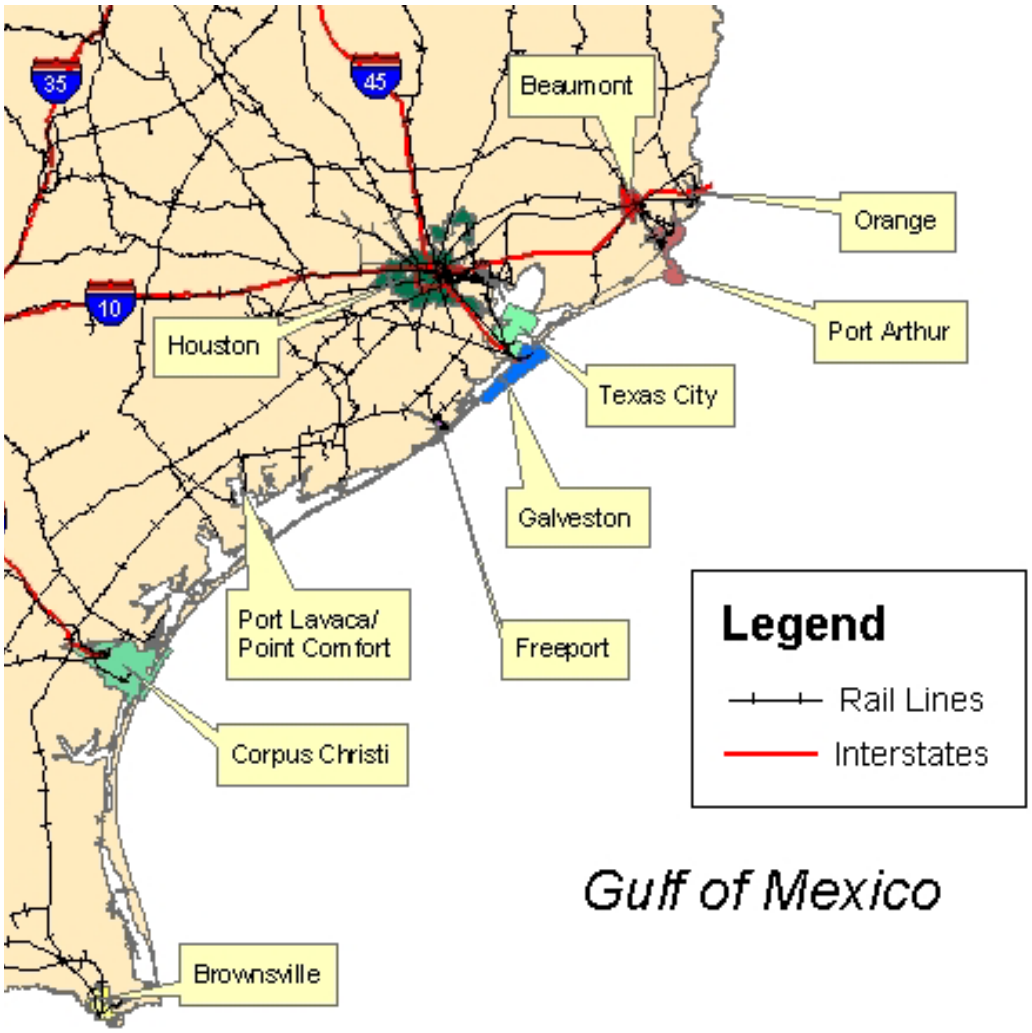
Source: U.S. Corps of Engineers.

Forecasted Gulf Coast Ports Rail Freight

Inbound and outbound rail freight handled by Texas Gulf Coast Ports is forecasted to increase from 106 million tons in 1998 to more than 144 million tons by 2025. Houston is expected to continue to account for the largest volume of port related rail freight tonnage in Texas, forecast to increase by almost 49 percent, from 70 million tons in 1998 to 104 million tons by 2025, followed by Beaumont, Corpus Christi, and Brownsville.

Texas seaports contribute enormously to the State's economic vitality and the flow of goods. Maintaining and improving rail connectivity with the ports will enhance the efficiency of statewide goods movements, and requires ongoing evaluation, investment and improvements. There are 10 primary deep-draft seaports located along the Texas Gulf Coast. Figure 2.7 shows the Texas Gulf Coast with several major seaports indicated. The following section discusses rail connectivity and operations at the ten deep-draft seaports of Houston, Galveston, Texas City, Freeport, Brownsville, Corpus Christi, Lavaca/Point Comfort, Beaumont, Orange, and Port Arthur.

Figure 2.7 – Texas Ports and Rail



Port of Houston Authority

Texas' busiest and largest seaport in terms of tonnage and commercial value is the Port of Houston. The Port of Houston is a 25-mile-long complex of public and private shipping agencies and facilities located just a few hours from the Gulf of Mexico. The Houston area is served by BNSF, UP, and TexMex (through trackage rights), with the port areas along the Houston Ship Channel served by the Port Terminal Railroad Association (PTRA). All of the Port of Houston's facilities are served by the PTRA except Woodhouse.

The Port of Houston provides over 170 miles of railroad tracks, as well as heavy equipment for moving freight including container lift machines, cranes, rail ramps, forklifts, and heavy lift docks. Approximately 130 different trucking companies also transport cargo in and out of the port. The main commodities include grain, iron and steel, and container shipments.

U.S. Corps of Engineers statistics show a constant increase in total tonnage handled by the Port of Houston, from 109 million tons (1980) to 191 million tons (2000). This increase in tonnage is expected to continue, creating enormous challenges for highway and rail infrastructure. In anticipation of providing satisfactory service to all of the port's tenants, the Port of Houston has renovated many of its terminals, including a $40 million project at the Barbours Cut terminal that allows a higher volume of containers to be handled and the accommodation of larger vessels. The new intermodal rail ramp at Barbours Cut terminal includes the addition of four working tracks (each approximately 2,700 feet in length) and five storage tracks (each approximately 2,550 feet in length). The Port of Houston Authority is in the process of developing a new $1.5 billion container, intermodal, and cruise facility at Bayport, in southeast Harris County which will include access by highway, rail, and waterways.

Port of Galveston

The Port of Galveston is a wholly owned utility of the City of Galveston. Established in 1825, it is located at the mouth of Galveston Bay on 300 acres of land on the northern end of Galveston Island and 549 acres on Pelican Island. Port rail facilities include storage, heavy lift cranes, forklifts, and one rail ramp for loading and unloading. The Port of Galveston's inbound trade consists mainly of cement, fruits, and vehicles, while the outbound trade is mostly grain. The terminal railway for the Port of Galveston is the Galveston Railroad, L.P. (GVSR). The GVSR operates on 32 miles of yard track with 126 turnouts spread over 50 acres. GVSR delivers cars to BNSF and UP, whose lines transport commodities via railway to the rest of the nation. Rail access at the Port of Galveston serves the Pier 10 Container Terminal, the export grain elevator, an import/export vehicle handling facility, Imperial Sugar, the Foreign Trade Zone and the rail-barge terminal at piers 37 and 38.

Port of Texas City

The Port of Texas City is the eighth largest seaport in the United States and the third largest in Texas. The port has been in operation since 1893, and is located on Galveston Bay, eleven miles inland from the Gulf of Mexico. A number of oil refineries and chemical processing plants are located on port property and nearby with an extensive network of pipelines connecting the docks to these refineries.

The Port of Texas City is a privately owned seaport whose major shareholders are the UP and BNSF. The Port of Texas City Railway Company, jointly owned by UP and BNSF, provides switching services for all industries and businesses, typically handling

over 25,000 cars per year. Interchanges with UP and BNSF within six miles of the main classification yard help expedite switching operations at the port.

Port of Freeport

The Port of Freeport opened for commercial traffic in 1926. The Port of Freeport is classified as a deep-draft seaport, located just 1.3 miles from deep water, allowing the Port of Freeport the ability to offer a fast and safe turn around to ship operators.

The Port of Freeport provides direct connection to highways, inland rail systems, and barge transportation. The UP has direct connections to the ports' covered loading areas. This port has a service capacity of up to 75,000 twenty-foot-equivalent container units (TEUs) making it the second most popular destination for all containerized cargo into Texas after Houston.

Port of Brownsville

The Port of Brownsville, established in 1936, is located on the southern most point of Texas along the Gulf Coast, three miles north of the Rio Grande and the Mexican border. The port's location is in both a major metropolitan district and an International Border District, and is classified as a deep-draft seaport.

The Brownsville Rio Grande International Railroad (BRG) services the port, providing connections to the UP and Transportacion Ferroviaria Mexicana (TFM) across the border. Railroad transportation plays an important role for the port's daily operations, with rail service to warehouses, surrounding industries and every dock in the area. The port has storage capacity for approximately 500 rail cars. Four cargo docks have ship-side tracks and three of them also have double depressed tracks at the rear of the transit sheds.

The BRG has completed the construction of an additional 190-car track on the south side of the channel to service new container business, and is negotiating with UP for the purchase of the Palo Alto Yard. Planned transportation improvements include a new bridge to be constructed over a 1,000-foot wide strip of land owned by the port and a major upgrade of the railroad network. Brownsville transportation entities are working on a project called the West Rail Relocation Plan that will allow the UP railway system to link directly to the Port, eliminating approximately 60 to 70 unnecessary highway-railroad crossings. (Chapter 5 provides more detailed information on this project.)

Port Of Beaumont

The Port of Beaumont Navigation District was established in 1949 and currently encompasses approximately 150 square miles of land, including the City of Beaumont, and is accessible via the federally maintained Sabine-Neches Ship Channel. The facilities at the port include heavy lift cranes, forklifts, and other heavy equipment for

handling cargo. Moving cargo into and out of the port is assisted by an extensive railway system that can accommodate 600 rail cars, and handles 80 cars simultaneously at shipside. The Port of Beaumont performs all terminal switching of rail cars through the use of a subcontractor. Rail freight service connections are provided by UP, BNSF, TexMex, and KCS. The Port of Beaumont has developed a project to improve rail access by the Class I's, which would reduce delays at the Port and on the mainline. Information regarding this project is included in Chapter 5.

KCS assisted in the development of the 400-acre Triangle Marine Industrial Park in Beaumont. The industrial park accesses KCS' 23-acre rail yard and includes a switching yard with a 150-car capacity, which could potentially be expanded to 300 cars if necessary. The industrial park includes 1,700 feet of frontage on the Neches River with three deep water docks and a 90-acre turning basin.

Port of Port Arthur

The Port of Port Arthur is a deep-draft seaport located on the Gulf Intracoastal Waterway (GIWW) north of Houston and east of Beaumont, 19 miles from the Gulf of Mexico. The port has been in public operation since 1968, and is actually an improved bank of the GIWW that is capable of handling numerous types of cargo. It is serviced by KCS, with trackage rights and reciprocal switching agreements providing connections to UP and BNSF. The port's rail system consists of three wharf tracks with 150 car capacity, two shed tracks with 80 car capacity, and a six-track storage yard with 140 car capacity.

Port of Orange

The Port of Orange is a deep-draft seaport located on the Sabine River approximately 36 miles from the Gulf of Mexico. The Port is near Interstate Highway 10, less than 100 miles east of Houston. The port is served by UP, BNSF, and Sabine River and Northern Railway.

The port includes four berths with a total of 2,300 feet of docking space and eight warehouses. All warehouses have covered rail service, allowing up to 60 cars to be unloaded simultaneously. The port is owned by the Orange County Navigation and Port District, which serves as both the port authority and the industrial development authority for the county.

Port of Corpus Christi

The Port of Corpus Christi is located along the southeastern coast of Texas on the Gulf of Mexico approximately 150 miles north of the Mexican border. The port opened in 1926. It is one of the deepest seaports along the Gulf of Mexico, with a depth of 45 feet along its navigational channel, and is second in the amount of tonnage moved at Texas seaports. Port services include an extensive line of heavy equipment such as container lift machines, heavy lift docks, cranes, forklifts, and refrigerated facilities, with a container handling capacity of up to 100,000 TEUs.

Twenty-six miles of port-owned rail lines are operated by the Corpus Christi Terminal Railroad, which serves the public docks within the Inner Harbor. Mainline rail service connections are provided by three carriers: BNSF, TexMex, and UP. The Port of Corpus Christi has specially designed rail cars that can handle very heavy petroleum refining equipment. Rail traffic through the port amounts to approximately 1.5 million tons per year. Most rail shipments through the port are heavy in nature and move in trainload or volume quantities. These include minerals, metallic ores, unit trains of export grain, and over-sized loads of industrial equipment moving over the General Cargo docks. In mid-2000, an on-dock refrigerated distribution center with rail access opened at the port. The Port of Corpus Christi completed a study in 2003 to develop a long-range master plan for rail that will ensure adequate rail terminal facilities for future operations at the port. The Port is in the process of identifying funding and methods of implementing the long-range plan.

Port of Port Lavaca-Point Comfort

The Port of Port Lavaca-Point Comfort is a deep-draft seaport located near the midpoint of the Texas Gulf Coast, at the western terminus of the Matagorda ship channel. The port is owned by the Calhoun County Navigation District and primarily serves local industries and manufacturers. Rail services are provided by the Point Comfort and Northern Railway (PCN), which operates on 16 miles of rail lines at the port and surrounding area. PCN interchanges with the UP in Calhoun County. Rail infrastructure is limited and rail access is generally considered less than adequate.

2.6 - Recent Changes to the Rail System in Texas

Recent Railroad Mergers & Acquisitions in Texas

Two major mergers of Class I rail carriers within Texas occurred in the mid-1990's:

- Burlington Northern Railroad (BN) with the Atchison, Topeka and Santa Fe Railway (ATSF) in 1995, becoming the Burlington Northern Santa Fe Railway (BNSF). The Burlington Northern Santa Fe changed their name to simply "BNSF" in 2005; and
- Union Pacific Railroad with the Southern Pacific Transportation Company (SP) in 1996, which is now referred to simply as Union Pacific Railroad (UP).

With each of the four pre-merger railroad companies being major operators in Texas, the state became a focal point for challenges faced by the companies as they integrated their businesses. The Houston area experienced significant disruptions in service in 1997 and 1998.

Steps taken to resolve the problems that surfaced following the mergers included new investments to assist the flow of rail traffic (such as new connections between UP and

SP track), implementation of directional rail traffic on some routes, and consolidated dispatching. While serious service issues have been largely resolved, the mergers and the terms that were required for them to take place have greatly influenced railroad operations in Texas. Nationally, congestion on the rail system has caused such high concern that the STB has requested each Class I provide a report on how the railroad will address service issues during the peak shipping season, typically beginning in the early fall.

Efficiencies Gained from Mergers

Although the UP-SP merger resulted in some negative impacts for rail service in the Houston area, it has produced some positive effects due to improved utilization of the existing infrastructure as well as significant investments from UP following the merger. The $1.4 billion infrastructure investment over the 1997-2002 period included track replacement, the addition of centralized traffic control, additional sidings, and improved connections. Investment was targeted for a broad region that includes the routes that flow into Houston – a regional area roughly bounded by Corpus Christi, San Antonio, Bryan/College Station, Texarkana, and Beaumont.

Other operational efficiencies resulting from the UP-SP merger include directional track into and out of Houston and more direct routing between Fort Worth and El Paso.

- Prior to the merger, the UP and SP used their own rail lines to reach Midwestern markets. The UP used a line from Houston to Texarkana to Little Rock while the SP's line went from Houston to Texarkana to Pine Bluff, Arkansas on its way to St. Louis and Chicago. Both of these lines were single tracks with sidings to accommodate two-way traffic. Since the merger, UP has dedicated the former SP line for southbound rail traffic and has devoted its own track for the use of northbound traffic. According to UP, northbound traffic from Houston tends to include more fully loaded cars. For this reason, UP's track which was in better condition than the SP track, was earmarked for the northbound service. On a daily basis, there are about 30 trains going in each direction on these tracks. The use of directional running has made the flow of trains into and out of the Houston area more efficient.
- Before the merger, SP carried freight on its own lines from Fort Worth to El Paso via San Antonio. Trains on this route now save 350 transit miles by going directly from Fort Worth to El Paso using the UP "Baird" line that runs through Midland-Odessa.

BNSF has also realized new efficiencies as a result of the mergers. Examples include improved rail service in the Lubbock area, as well as access to the border at El Paso, Eagle Pass, and Brownsville. In addition they acquired the route that runs from Fort

Worth to Oklahoma City and obtained significant trackage rights over the UP rail system, imposed as conditions to approve the UP-SP merger by the STB.

Class II & Class III Rail Mergers, Acquisitions, and Consolidations

RailAmerica and RailTex

In January 2000, the STB granted RailAmerica Inc.'s petition to acquire control of RailTex, Inc. At the time the petition was granted, RailAmerica controlled 12 domestic Class III railroads, and RailTex controlled 17 domestic Class III railroads. The STB received over 100 letters of support from customers of RailAmerica and RailTex, as well as letters of support from various federal, state, and local representatives. Together, RailAmerica and RailTex controlled railroads that operated in 26 states, employed 1,000 workers, and generated approximately $200 million in revenue. In Texas, at the time of the transaction, RailAmerica controlled:

- the West Texas & Lubbock Railroad, which operated approximately 104 miles of rail line in Hockley, Lubbock, Terry, and Gaines counties
- the Texas New Mexico Railroad, which operated approximately 34 miles of rail line in Winkler and Ward counties
- the Dallas, Garland & Northeastern Railroad, which operated approximately 187 miles of rail line in Dallas, Rockwall, and Hunt counties, and
- the Texas Northeastern Railroad, which operated approximately 217 miles of railroad in Bowie, Lamar, Fannin, and Grayson counties.

Austin Area Terminal Railroad

In April 2000, the Longhorn Railway Company filed a petition to discontinue service over a rail line owned by Capital Metropolitan Transportation Authority (CMTA) from milepost 0.00 near Giddings to milepost 154.07 near Llano. The Austin Area Terminal Railroad filed a petition to operate this line for CMTA. In this transaction, the STB granted the change of operators requested. Current activity along the line includes the Hill Country Flyer excursion train from Cedar Park to Burnet, as well as freight rail service which serves mainly the rock quarries of Burnet County. A recent voter referendum approved the implementation of commuter rail service along this line from Leander to downtown Austin (See chapter 3 for more information on passenger rail services).

Moscow, Camden & San Augustine Railroad; Angelina & Neches River Railroad

In May 2000, the International Paper Company merged with Champion International Corporation, acquiring over 90 percent of Champion's outstanding common stock. Champion International owned 100 percent of Moscow, Camden & San Augustine Railroad's (MCSA) stock; and 50 percent of the Angelina & Neches River Railroad's (ANR) stock. In July 2000, International Paper filed an exemption to acquire control of

MCSA and ANR as a result of this stock purchase. The MCSA operates on approximately seven miles of line in Polk County. The ANR operates on approximately 15 miles of line in Angelina County. The two lines do not connect. The STB granted the application as filed.

Northeast Texas Rural Rail Transportation District

In July 2000, the Northeast Texas Rural Rail Transportation District (NETEX) filed a notice of exemption to acquire approximately 34 miles of a UP rail line from milepost 524.00 near Sulphur Springs to milepost 489.41 near the Franklin County line. NETEX also acquired approximately 10.41 miles of incidental trackage rights from UP for the purpose of interchanging traffic. The line acquired connects with NETEX's own rail line at milepost 524.00, which travels to Greenville at milepost 555.00. The STB granted the exemption as filed.

Texas Mexican Railway Company

In August 2000, the Texas Mexican Railway (TexMex) filed an exemption to acquire and operate UP's Victoria-Rosenberg line. The line is an 84.5-mile railroad line from milepost 87.0 near Victoria to milepost 2.5 near Rosenberg. It is located in the counties of Jackson, Victoria, Wharton, and Fort Bend. The STB granted the petition.

The line was out of service at the time of acquisition and is in need of significant rehabilitation. TexMex intended to restore service to former shippers on the line and use it as a more direct route between Robstown and Rosenberg. Routing over the Rosenberg line instead of using current trackage rights over UP's Sunset Route will reduce TexMex's mileage between Laredo and Houston by 67 miles in each direction. KCS recently purchased the Tex-Mex, and the acquisition was approved by the STB in November 2004. KCS has invested significant funds in upgrading the TexMex line from Laredo to Corpus Christi, and also plans on restoring service to the Victoria – Rosenberg corridor.

Fort Worth and Western Railroad Company

In November 2001, the Fort Worth and Western Railroad (FWWR) filed a notice of exemption to acquire (by lease) and operate UP's Peach Yard, extending from milepost 611.2 to milepost 611.8 in Fort Worth. FWWR also acquired 12.4 miles of non-exclusive incidental trackage rights for the purpose of interchange through the transaction. The STB granted the exemption as filed.

RailAmerica and Kiamichi

In December 2001, RailAmerica filed a petition to acquire the Kiamichi Railroad. At the time of the transaction, RailAmerica controlled two Class II and 23 Class III railroad companies. Kiamichi operated approximately 13 miles of rail line in Lamar County. In its application, RailAmerica indicated that control of Kiamichi created the incentive for a new service from Dallas (via the Dallas, Garland and Northeastern [DGNO] and Texas

Northeastern Railroad [TNER] – both RailAmerica subsidiaries) over the Kiamichi to Oklahoma and Arkansas, creating competitive service with BNSF and UP. RailAmerica indicated in the STB filing that this potential service would provide the incentive for the TNER to repair its rail lines and reinstitute service to Paris, Texas and points west. The STB granted RailAmerica's petition as filed. However, on May 23, 2003, the UP and TNER filed an application with the STB to abandon the rail line between Paris and Bonham. These filings resulted in TxDOT acquiring this line (See "Rail Line Abandonment" in this chapter for additional information).

NAFTA Rail – KCS & TFM

In December 2004, KCS purchased a controlling interest in one of Mexico's three major rail lines, Grupo TFM. A new holding company, called "NAFTA Rail", was created as a result of the transaction. KCS, TFM, and TexMex will all be under common control by NAFTA Rail, though each will retain its name and assets. The combined company, including trackage rights, will consist of approximately 6,000 miles of track in the U.S. and Mexico; with access to 13 seaports, 14 intermodal ramps, and 181 interchange points with other railroads. NAFTA Rail intends to market "seamless service" from southern Mexico to the heart of the U.S.

New Rail Construction

Railport Industrial Park

In February 2000, the Ellis County Rural Rail Transportation District (RRTD) filed a petition with the STB to construct and operate 4.8 miles of rail line in Ellis County. The rail line was proposed to provide alternate service to a 1,700-acre business and industrial park known as Railport, which is adjacent to a BNSF track. The proposed line would cross BNSF's line and connect with the UP, providing shippers and industries at Railport with competitive, two-carrier rail service. In addition to constructing and owning the line, the RRTD also requested authorization to operate it after it was completed. The filing indicated that the RRTD expected to assign operating authority to an experienced operator once one was selected. The STB imposed environmental mitigation measures, but granted the petition.

After STB authorization was approved for the Ellis County RRTD to cross the BNSF line and proceed with constructing the new line to UP, BNSF requested a meeting with the RRTD to discuss the purpose of the district. Subsequently, a memorandum of understanding (MOU) was signed by BNSF, UP, Ellis County, the RRTD, and the Midlothian Development Agency (MDA). The MOU provides for track access, haulage, switching, and reciprocal exchange between BNSF, UP, and the RRTD with respect to rail service at Railport. The agreement stipulates that BNSF will accept railcars at their Alliance yard in Fort Worth from UP for delivery to Railport businesses. BNSF also committed to provide trackage and haulage rights to UP on the track serving the Railport facility. Railport switching work itself is to be carried out by BNSF. With the new

agreement, the build-out consisted of only two miles connecting to the BNSF line adjacent to the Railport complex.[3]

The Calhoun County/Seadrift Rail Line Construction

In January 2001, BNSF filed a petition with the STB to construct a 7.5-mile rail line to connect the Union Carbide industrial complex at Seadrift, Texas, with a UP line that runs between Placedo and Port Lavaca, Texas. In January 2002, the STB granted final approval for the BNSF to construct the Seadrift build-out, subject to recommended environmental mitigation measures. Construction of the line was completed in May 2003. BNSF utilizes trackage rights along the UP line between Placedo and Port Lavaca to access Union Carbide via the Seadrift construction. The Union Carbide complex, which had been served exclusively by UP, is located approximately 120 miles southwest of Houston near the Gulf Coast. Union Carbide supported the build-out as a means of providing competitive access to their facility, and acquired the necessary rights of way for the build-out.

Alamo North Texas Railroad Construction

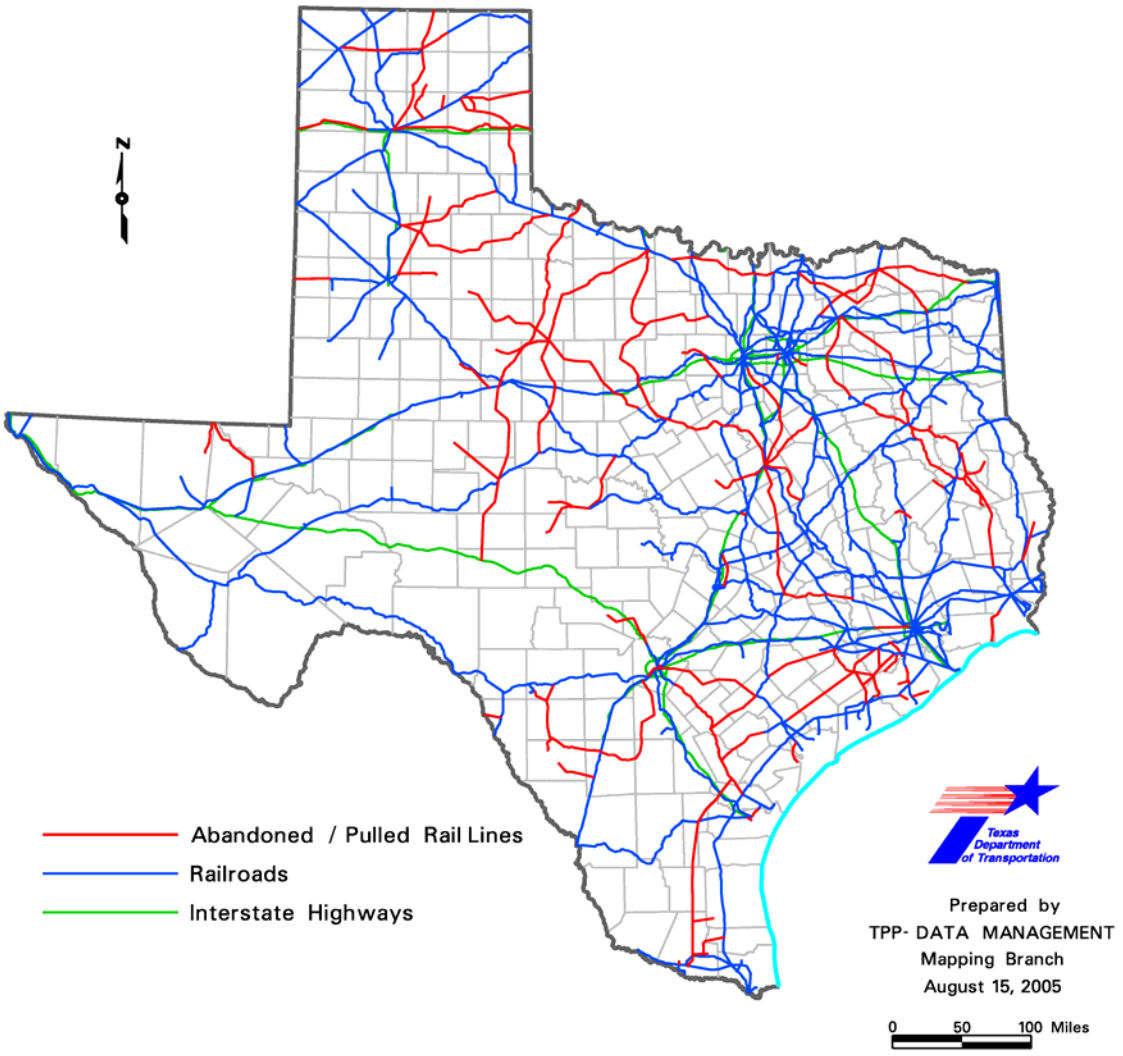
In August 2001, the Alamo North Texas Railroad filed a petition with the STB to construct a 2.25-mile rail line in Wise County. The line would extend from a connection with UP to an aggregate quarry near Chico, which is operated by Alamo North's parent company, Martin Marietta Materials Southwest. Alamo North estimated that when construction was completed, 40 percent of the products from the quarry would ship by rail, amounting to approximately three hundred 70-car trains per year. The STB granted the petition and imposed recommended environmental mediation measures.

2.7 - Rail Line Abandonment

The first rail development in Texas occurred along Buffalo Bayou in present day Houston in 1853 with a 20-mile segment. Railroad development across the state continued to grow until it peaked in 1932 when over 17,078 miles existed.[4] The miles of track in Texas have continually declined since that time period to the current level of 10,347 miles, representing a loss of 39 percent of the total track miles since its peak in 1932. Figure 2.8 displays rail line abandonments in Texas since 1953. Shown in red, it is easy to see the significant reduction in rail service to many parts of the state, particularly the rural regions of Texas. Rural towns and regions are especially affected by rail abandonment where shippers may be forced to shut down or relocate with the loss of viable transportation options, thus harming that areas economic base.

The adoption of the Stagger's Rail Act in the early 1980s paved the way for railroads across the nation to more easily shed economically unprofitable lines, by either selling marginal routes to short line operators or petitioning for abandonment. In Texas, the

Figure 2.8 – Abandoned Rail Lines in Texas Since 1953



number of Class II or III operators increased from 20 in 1979[5] to 44 in 2003. As mentioned earlier in the chapter, these carriers operated approximately 2,400 miles of track in 2003, much of which would otherwise have been abandoned. Unfortunately, one side-effect of transferring these previously unprofitable rail lines to short line operators is that they must struggle to make the line viable on infrastructure that has suffered from years of deferred maintenance. Ultimately the short lines, too, may seek abandonment due to financial constraints which prevent them from rehabilitating the rail lines they acquire.

One major concern regarding abandonments is the declining rail system's ability to handle increasing traffic levels. From 1991 to 2002 Texas experienced approximately 34 percent growth in tonnage transported by rail carriers. Over a similar time period (1991 to 2001), the rail network declined by over 1,200 miles. This translates into more trains operating over fewer miles of track, which could constrain an operator's ability to handle increased traffic levels without making substantial investments to improve the network. This also creates a greater conflict at highway-railroad grade crossings between trains and automobile traffic.

The loss of rail infrastructure and operations of certain lines due to abandonment also affects the capacity available for conventional intercity passenger rail service, which must increasingly share common infrastructure with the freight railroads. This results in a greater risk of conflicts and reduced capacity along the lines that could potentially be used for passenger rail. An example of rail line abandonment reducing future passenger options is the abandonment of a 23.5-mile right-of-way along the Cotton Belt rail line between Wylie and Greenville, northwest of Dallas. Abandonment of the rail line made the right-of-way subject to purchase by non-rail interests and spawned concerns that reacquiring the right-of-way might not be possible should passenger rail be desired in the future as the area's population grew. The NETEX RRTD purchased the corridor with funds appropriated by the 77th Texas Legislature through TxDOT to prevent the loss of the right of way.

Rail Banking

One way to combat the abandonment of railroad rights-of-way is to find agencies that are willing to purchase right-of-way to keep it intact for future service. In the case of the Trinity Railway Express (TRE), right-of-way between Dallas and Fort Worth was purchased with Federal Transit Administration assistance in advance of service start-up. Similarly Capital Metro in Austin and Houston Metro also purchased right-of-way to protect potential transportation corridors in their service areas. Capital Metro currently leases operating rights over parts of their right-of-way to the Austin Area Terminal Railroad. Houston Metro allows temporary trail uses on its preserved right-of-way. The TRE, Capital Metro and Houston Metro initiatives represent noteworthy examples of public sector "railbanking" in Texas.

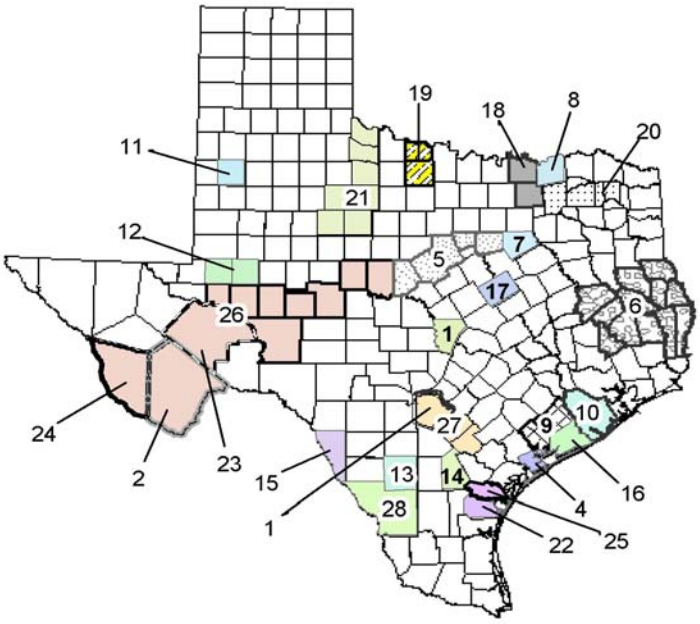
2.8 - Government Involvement in Freight Rail

Rural Rail Transportation Districts

Reductions in service and abandonments have had significant local effects in some of the state's rural areas. Rail abandonment normally is associated with reduced options for transporting harvests and increases in costs, so that the economic livelihood of these areas becomes less certain. Grain producers are especially vulnerable (See the "Texas Grain Transportation Study" for an overview of the importance of rail for moving grain[6]).

In response to concerns about the loss of rail service in rural parts of Texas, the Texas Legislature passed legislation allowing the formation of Rural Rail Transportation Districts (RRTD's) in 1981[7]. RRTD's were given the power of eminent domain as well as the authority to issue bonds to assist in their efforts to preserve rail infrastructure and promote economic development in the state.

Figure 2.9 – Rural Rail Transportation Districts in Texas



Legend

1 - Bexar	8 - Fannin	15 - Maverick	24 - Presidio
2 - Brewster	9 - Gulf Coast	16 - Matagorda	23 - Pecos
3 - Burnet	10 - Gulf Link	17 - McLennan	25 - San Patricio
4 - Calhoun	11 - Hockley	18 - North Central	26 - South Orient
5 - Centex	12 - La Entrada Al Pacifico	19 - North Texas	27 - South Texas
6 - Deep East Texas	13 - LaSalle	20 - Northeast Texas	28 - Webb
7 - Ellis	14 - Live Oak	21 - Northwest Texas	
		22 - Nueces	

As of November 2004, 28 rural rail transportation districts had been formed in the state, as shown in Figure 2.9. The current level of activity in these districts vary greatly, from

those that are actively involved in preserving rail corridors and providing services; to those that were unable to prevent abandonment of lines and are currently inactive.

The purpose of Rural Rail Transportation Districts (RRTDs) and the facilities they acquire is to help develop, maintain, and diversify the economy of the state. The intent is to reduce unemployment and foster economic growth within the district. One or more counties can establish RRTDs in order to acquire lines that may be abandoned, construct new lines or rehabilitate existing lines. The districts can also be used to develop rail to serve industrial parks, intermodal facilities, and transloading facilities.

Rail districts cannot levy ad valorem taxes, but can issue revenue bonds to finance acquisitions and construction. Rail districts must charge rents that are sufficient to maintain their properties and pay off their bonds.

2.9 - Rail Freight Infrastructure Assessments

The extensive Class I infrastructure in Texas necessitates a continual investment by the Class I railroads to maintain and upgrade their lines. Generally, rehabilitation and repair of rail lines is determined, prioritized, and performed by the line owner. The following line conditions reflect concerns that have a significant effect on the efficient movement of rail freight through the state.

- Weight Limitations – Infrastructure conditions exist at many locations that do not meet 286,000 pound capacity thresholds.
- Poor Track Conditions – Track conditions exist on various lines that limit train speeds to 25 mph and less. This not only affects system capacity and train speeds, but increases the probability of derailments occurring.
- Storage Yards – Currently, both BNSF and UP are evaluating their investments to reduce bottlenecks within terminal areas and switching facilities in hopes of managing the conflicts between trains and vehicle/pedestrian traffic.
- Rail Bridges – Evaluations of capacity needs should be performed on the six international rail bridges between Texas and Mexico. Evaluations of capacity needs should also be performed on the numerous rail bridges within the state. Many of these bridges are over 50 years old, and may need upgrades to handle consistent traffic with the increase in 286,000 pound capacity carloads.
- Directional Traffic – Single-track operational constraints reduce the train handling capability of rail lines. In areas where lines are single-tracked, trains must travel in both directions on the same railroad line, contributing to reduced capacity. By double tracking lines where possible and lengthening existing passing sidings elsewhere, the capacity of these lines would be greatly increased.

- Highway-Rail Grade Crossings – Where passive warning systems are present they prevent increased speeds for both passenger and freight trains. Rail/vehicular traffic conflicts in urban areas reduce train speeds and increase congestion. Community and transportation planners must consider the location of rail lines and eliminate rail-highway crossings when possible. Consideration must also be given to the location or relocation of rail lines through urban areas. The construction of additional at grade crossings when planning new developments should be avoided.
- Freight Rail Bottlenecks – Increasing freight rail volumes in Texas are straining the capacity of the existing infrastructure, causing bottlenecks where freight flows are heaviest.
- Ports - Rail access to most ports has become difficult due to infrastructure and capacity constraints.

Table 2.9 summarizes the rail freight capital needs and the estimated annual costs of those needs in Texas. Freight rail needs were extrapolated from national studies as a percentage of needs as estimated for the nation.

Table 2.9 Texas Rail Freight and Intermodal Freight Needs (in Millions)
2005 to 2030

Freight Needs	Estimated Annual Needs in Texas
Short line Infrastructure	$27
Class I Infrastructure	$396
Class I Non-Infrastructure	$159
Safety	$55
Total	**$637**

Source: Cambridge Systematics

Regional and Short Line Infrastructure Improvements

Class II and III railroads face significant challenges in maintaining and upgrading their infrastructure. Many short lines were formed as the result of Class I railroads divesting themselves of marginally profitable lines. Others, such as the Blacklands Railroad and Texas Pacifico, operate on lines that were saved from abandonment. In most instances, the infrastructure has deteriorated significantly due to deferred maintenance by prior owners. The short line owner/operators generally have invested most, if not all, of their capital to acquire the facilities and have very limited resources available for line maintenance. Major rehabilitation or upgrades of the railroad lines are generally not feasible.

The recent increase of standard railcar weight limits from 263,000 pounds to 286,000 pounds presents a substantial challenge to the short line industry. A recent study, sponsored by the American Short Line and Regional Railroad Association (ASLRRA) reveals the significant costs associated with rehabilitating these lines to 286,000-pound capacity. The findings of the ASLRRA study are included in a position paper entitled "286 Problem on Light Density Rail Lines", which can be accessed at the ASLRRA website (www.aslrra.org).

Chapter 5 contains additional information about some freight and passenger rail projects which may benefit the railroad system of Texas if implemented.

[1] Association of American Railroads, 2001.

[2] DRI-WEFA.

[3] Source: *Texas Rural Rail Transportation Districts: Characteristics and Case Studies*. Texas Transportation Institute, 2002.

[4] *Texas Railroads: An Evaluation*. Texas Transportation Institute, 1977.

[5] *The Texas Rail Freight System: An Overview and Outlook*. Railroad Commission of Texas, 1979.

[6] *2001 Texas Grain Transportation Study*. Center for Transportation Research, University of Texas and Department of Agriculture Economics, Texas A&M University, 2001. Available on-line @www.dot.state.tx.us/mis/graintransp/study.htm

[7] Vernon's Texas Civil Statutes, Title 112, Chapter 13: Miscellaneous Railroads, Article 6550c: Rural Rail Transportation Districts.

3.0 – Passenger Rail Systems

3.1 – Definition

Passenger rail service in Texas is defined as intercity and commuter rail services contributing to a multimodal strategy and providing people with choices for completing their travel needs. Passenger rail service in Texas is currently provided at the regional/intercity level by the National Railroad Passenger Corporation (Amtrak) and at the commuter level by Dallas Area Rapid Transit (DART) and the Fort Worth Transportation Authority (the "T"). There are also two light rail systems in Texas provided by DART, and Houston Metro (METRORail). Light rail systems are considered local transit, and as such are only covered in the TRSP as reference to their connectivity with regional and intercity rail services.

The purpose of this chapter is to provide:

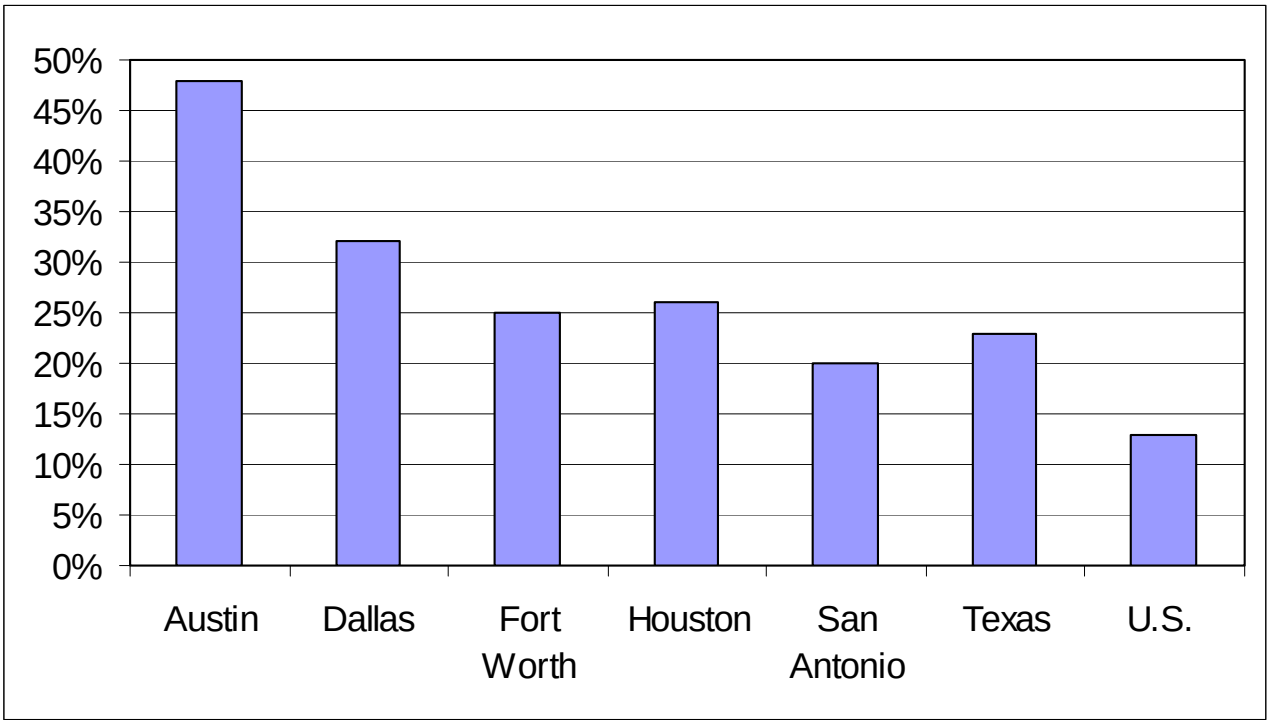
- an overview of the demographic and transportation needs that are driving demand for improved passenger rail in the state;
- an overview of existing and proposed passenger rail services in the state;
- an analysis of recent trends in passenger rail; and,
- identification of issues affecting passenger rail service in the state.

In general, much of this section is geared towards major urban areas as they dominate the demand for intercity rail and have large enough populations to support commuter rail transportation. It is important to acknowledge, however, the important role of intercity passenger rail in some rural areas as the sole transportation alternative (at times complemented by intercity bus service) to the automobile.

3.2 - Need for Increased Emphasis on Passenger Rail in Texas

Alternative transportation service needs increase with population growth and the subsequent congestion that it brings to the existing transportation system. The need for other transportation modes is especially apparent in Texas' major urban areas. Several of these areas have implemented or studied passenger rail options to support their efforts to reduce congestion and improve regional mobility. Figure 3.1 shows the growth rates of key Texas metropolitan statistical areas that have either implemented or have considered implementing local passenger rail service since the 1994 Texas Transportation Plan. Over the decade between 1990 and 2000, each of these areas grew at a much faster rate than the United States as a whole. The Austin urban area led all of these cities with a growth rate of 48 percent during that time period.

Fig. 3.1 Population Growth in Large Texas Metropolitan Statistical Areas 1990 - 2000



Source: Texas State Data Center and U.S. Census Bureau

Projected Growth in VMT in Intrastate Corridors

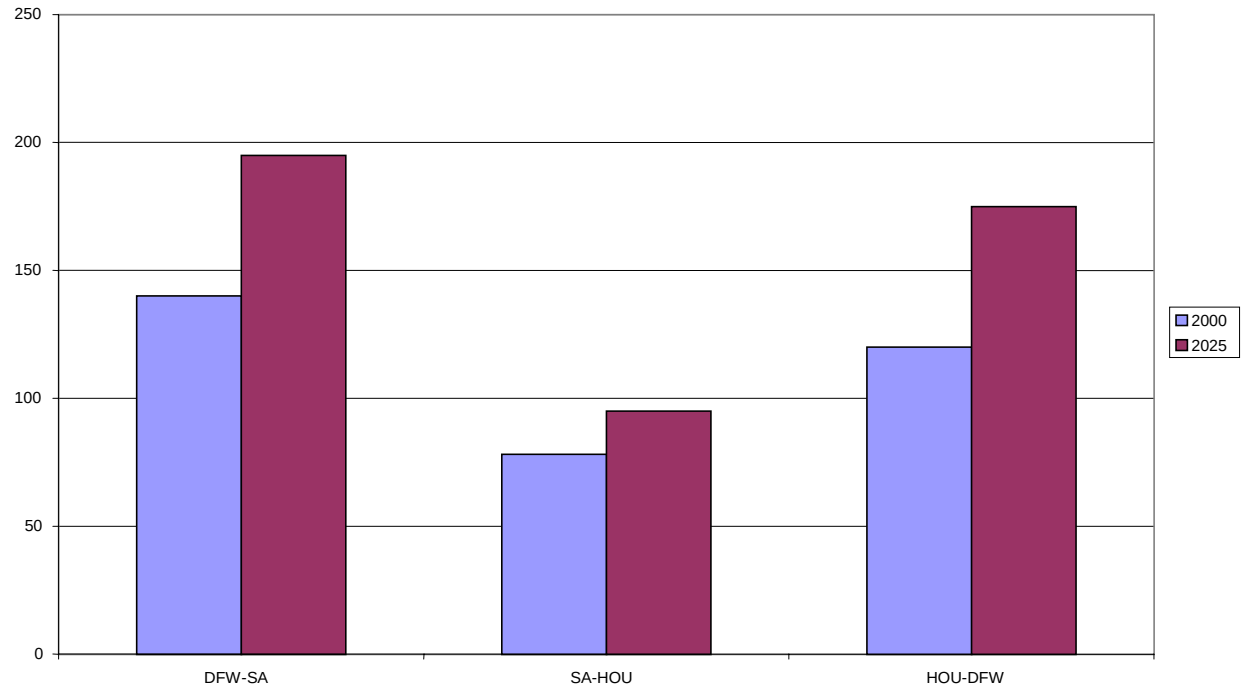
Fueled by population and economic growth, projected increases in vehicle miles traveled (VMT) in Texas cities and along key Texas corridors will contribute to increased roadway congestion and problems with air quality.[1] Congestion and non-attainment status may also heighten demand for rail as a transportation alternative. Figure 3.2 provides projections of VMT increases in three key corridors between 2000 and 2025:

- Dallas-Fort Worth to San Antonio,
- San Antonio to Houston, and
- Houston to Dallas-Fort Worth.

Among these three corridors, the growth in VMT between Dallas-Fort Worth and San Antonio is forecast to increase the fastest, by nearly 50 percent, while increases on the

San Antonio-Houston and Houston-Dallas-Fort Worth corridors are projected to grow by 28 percent and 41 percent, respectively.

Fig. 3.2 Forecast Growth in VMT on Inter-City Corridors 2000 – 2025 (VMT in millions)



Source: VMT forecast developed by Cambridge Systematics, Inc.

Projected Growth in Intercity Corridors

The Austin-San Antonio Corridor, stretching along I-35 from Williamson to Bexar County, comprises one of the fastest growing regions in Texas and the country. The Austin-San Antonio Corridor as a whole grew by 671,000 people during the 1990's, from 2.18 million people in 1990 to 2.84 million in 2000, an increase of 31 percent. Economic, social, educational, and cultural ties, combined with strong population growth, have helped meld the two large urban areas together along with the smaller communities between them, creating a larger cohesive regional area. These trends have resulted in traffic increases on I-35 and growth in the region is predicted to continue. Total VMT in the Austin-San Antonio Corridor is expected to significantly outpace the overall growth of the

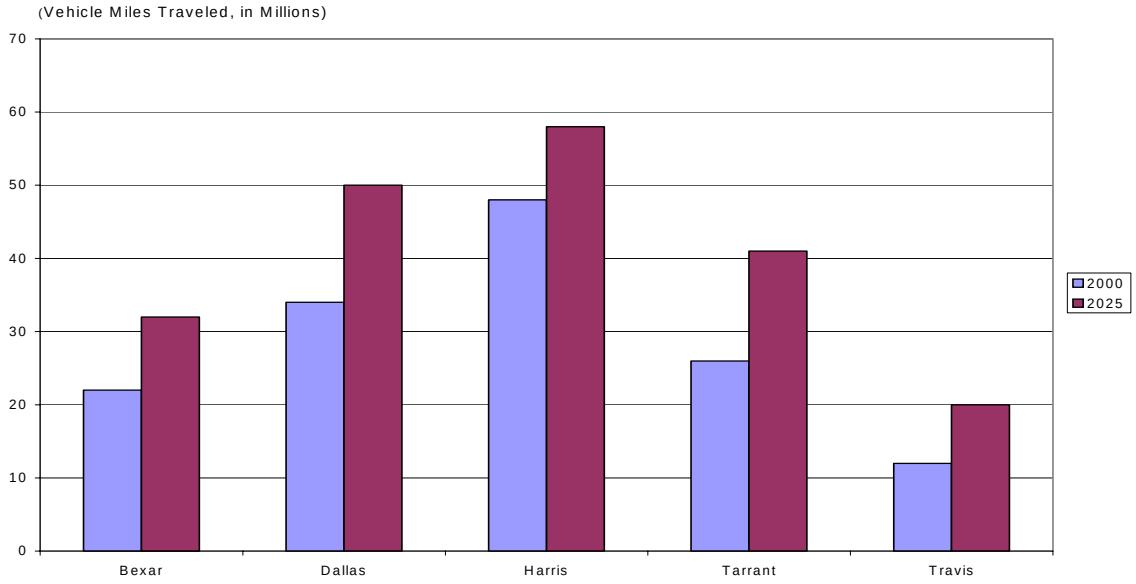
state during the 1999-2025 period. While VMT in Texas is projected to grow by 39 percent through 2025, VMT in the Austin-San Antonio Corridor is predicted to rise by close to 58 percent.

The Texas Transportation Institute's 2003 Urban Mobility Study analyzed rising roadway congestion in the region, showing that Austin and San Antonio rank first and third respectively, in their urban categories, in terms of percent of daily travel spent in congestion. This type of mobility limitation in the region has kindled interest in commuter rail as an alternative option for travel between the corridor's cities.[2]

3.3 - Concerns About Large Counties VMT

Increases in vehicle congestion along Texas' major inter-city corridors between 2000 and 2025 may encourage people to seek alternatives to driving. The anticipated growth in VMT within the state's most populous counties and steadily escalating fuel prices may influence people to use transit (including commuter or light rail) or other transportation options (i.e.; carpooling) to reach jobs, schools, and shopping centers. Between 2000 and 2025, the VMT in large Texas counties are projected to expand by 21 percent in Harris County to as much as 60 percent in Tarrant County as shown in Figure 3.3. Congestion concerns in each of these counties will heighten during this period. Multiple efforts, both highway and non-highway, must be made to alleviate the transportation impacts of the predicted increases in VMT.

Fig. 3.3 Forecast VMT Growth for Center Counties In Large Metropolitan Areas 2000 - 2025



reported that the population of North Texas grew by 10 percent between 1995 and 1999. During that same time, the total VMT increased by approximately 18 percent. Despite the growth in population and VMT, road capacity increased by only 2 percent during the period. As expected, these trends are further corroborated by statistics showing that North Texans are spending 37 percent more time on congested roadways than they were in 1995.[3] One of the options for addressing this problem is to provide alternative transportation services such as increased passenger rail service.

With the forecast growth in VMT and the ensuing increase in congestion, rising demand may emerge for rail transportation services in other cities. Presently most Texans either fly or drive for their inter-city travel. For example, in 2003, roughly 1.5 million air passengers flew between Dallas and Houston. Rail travel was not an available option in this corridor, but, in that same year, fewer than 50,000 total passengers used Amtrak trains to travel from either Houston or Dallas to all destinations. The distance between Dallas and Houston is less than 250 miles. Higher speed trains operating at reasonable frequencies could meet much of the travel demand, freeing up capacity on the airways and at Texas airports for other flights. In addition, it could ease vehicular traffic on I-45.

New Amtrak service, such as the Heartland Flyer between Fort Worth and Oklahoma City, was introduced in spite of ridership projections that would give rail only a small share of the total travel between markets on this corridor. The Oklahoma Department of Transportation (ODOT) funded a share of the rail improvements on Oklahoma portions of this corridor. It was estimated that 25,000 riders would need to use the service annually for the Heartland Flyer to be considered successful.[4] By comparison, in 2003 roughly 200,000 air passengers flew the route between Oklahoma City and Dallas-Fort Worth. During its first year of operations the Heartland Flyer, greatly exceeded the initial desired demand forecast, and the annual number of riders on the route in FY 04 was more than 50,000. To further increase passenger demand, Oklahoma is considering improvements to decrease run-times on the route. Presently, the Heartland Flyer takes approximately 4 hours and 15 minutes to travel from Oklahoma City to Fort Worth, about 45 minutes more than the same trip by car.[5]

While demand for inter-city travel in Texas may warrant a much improved, high-speed passenger rail system, the costs to make the necessary improvements to accommodate such a system are steep and would require major changes in existing transportation policy and funding priorities. Significant investments in passenger rail would need to be weighed against other transportation needs in the state. Additionally, financial performance on existing Amtrak routes through Texas require continued evaluation of the economic costs and viability of providing improved passenger rail service in the state, as the Texas Eagle continues to exhibit a fairly steady degree of ridership, while the Sunset Limited route struggles to retain riders.[6]

3.4 - Existing Passenger Rail Services in Texas

Existing passenger rail service in Texas as discussed in this chapter is classified into two major areas—intercity rail service and commuter rail services. Intercity rail service is broken down into two sub-areas—the Amtrak intercity rail system routes in the state and commuter rail services that serve one or more urban areas within the state. Commuter

Fig. 3.4 Current Amtrak Routes in Texas

Source: Texas Transportation Institute

rail services are defined as urban or regional passenger rail services operating on standard rail. Both forms of passenger rail play a role in contributing to a multimodal strategy by providing people with choices for completing their travel. Passenger rail service in Texas is currently provided at the intercity level by Amtrak and at the regional/commuter level by Dallas Area Rapid Transit (DART) and the Fort Worth Transportation Authority (The "T"). There are also two light rail systems in Texas provided by DART, and Houston Metro (METRORail). Light rail systems are considered local transit, and as such are only covered in the TRSP as reference to their connectivity with the regional and intercity rail services.

Amtrak Intercity System

Currently, the National Railroad Passenger Corporation, Inc. (Amtrak) is the sole provider of intercity passenger rail service in Texas. It serves most of the state's major urban areas. Amtrak's partnership with Greyhound serves other areas of the state by providing bus connections where possible. Figure 3.4 includes a map of Amtrak passenger lines in Texas. Three Amtrak routes, the Sunset Limited, Heartland Flyer, and the Texas Eagle, provide intercity passenger rail service in Texas. A description of their services follows.

The Sunset Limited – Orlando to Los Angeles

The Sunset Limited is an east-west route that traverses Texas on its way from Orlando to Los Angeles. Major stops prior to entering Texas from the east include Mobile and New Orleans. In Texas, the Sunset Limited provides service to major cities and towns such as Houston, San Antonio, and El Paso with stops in smaller towns and cities including Beaumont, Del Rio, Sanderson, and Alpine. After leaving Texas the route continues through New Mexico, Arizona and California before terminating in Los Angeles. This route is currently scheduled to run three times a week in each direction providing transportation options for trips within the state as well as to destinations outside of Texas.

In total, the Sunset Limited travels 3,000 miles as it crosses eight states. Over 800 miles of this are within Texas. Based upon an average operating speed of less than 40 mph, the Texas portion is covered in 21 hours, 12 minutes. In 2000, Amtrak released a plan to increase its ridership by expanding its network. Included in Amtrak's Network Growth Strategy was a plan to re-route the Sunset Limited through Texas. This plan was never implemented, but called for moving the route to a more northerly track serving larger population centers of the state. From Houston, the route would have gone to Dallas, Fort Worth, Abilene, Midland, Odessa, and on to El Paso. San Antonio would have lost service on the Sunset, but connections to it would have still been possible by taking Amtrak's Texas Eagle to Fort Worth and switching over to the Sunset Limited there. Del Rio, Sanderson, and Alpine would have lost service altogether. At present, Amtrak is

not actively pursuing this re-routing strategy with the freight railroads over which it would potentially travel.

The Texas Eagle – San Antonio to Chicago

Amtrak provides daily service on the Texas Eagle between San Antonio and Chicago via Fort Worth, Dallas, and St. Louis, a distance of over 1,300 miles. In Texas, the current stops on the Texas Eagle include San Antonio, San Marcos, Austin, Taylor, Temple, McGregor, Cleburne, Fort Worth, Dallas, Mineola, Longview, Marshall, and Texarkana. Ridership on the Texas Eagle has grown in the past few years after facing several threats of discontinued service.

In 1996, Amtrak announced that it would terminate the Texas Eagle, which at the time ran three times a week from Chicago to Los Angeles and back. Several concerned parties contacted TxDOT to see if the department could do something to retain service. Amtrak pushed the termination date back several times until, in 1997, the 75th Texas Legislature passed acts directing TxDOT to loan $5.6 million in general revenue funds to Amtrak with the provision that Amtrak maintain the Texas Eagle for a specified period. The loan was to be repaid with interest by July 31, 1999. Amtrak repaid the loan in full two months prior to the deadline in May of 1999.

During the period specified in the loan, Amtrak was able to increase the profitability of the Texas Eagle by adding the capability to carry mail and express freight, a practice it recently discontinued. Amtrak was also able to increase the number of Texas Eagle trains to daily operations between San Antonio and Chicago. Current service between San Antonio and Los Angeles continues as a three times per week connection with the Sunset Limited at San Antonio.

The Heartland Flyer – Fort Worth to Oklahoma City

Beginning in June 1999, Amtrak initiated service on the Heartland Flyer route, reinstating passenger rail service in North Texas and Oklahoma for the first time in over 20 years. The Heartland Flyer, with service between Oklahoma City and Fort Worth, runs one trip daily in each direction and serves the Texas cities of Fort Worth and Gainesville, providing connections to the Texas Eagle at Fort Worth. This service is financed and operated through a partnership between Amtrak and ODOT. The service transported over 65,000 passengers in its first year of operation. This success resulted in ODOT discussions with Amtrak officials regarding a possible service extension to Tulsa[7].

Connecting Services – Amtrak Thruway Motor Coach Service Program

Amtrak's partnership with Greyhound provides motor coach service to the Sunset Limited and Texas Eagle trains from cities not accessible to these rail lines. This service was initiated through the Amtrak Thruway Motor Coach Service Program, which

facilitates intermodal connections between Amtrak and motor coach services by providing through ticketing, scheduling, and bus/train reservations. Routes for Amtrak's Thruway Motor Coach Service in Texas include Houston-Dallas, Houston-Longview, Laredo-San Antonio, Brownsville-San Antonio, Killeen/Fort Hood-Temple, and Odessa-Fort Worth.

Plans for Future Amtrak Service Improvements

Prior to Amtrak's current reorganization and the financial limitations imposed by the restructuring proposals, several additions were proposed for future Amtrak services that could enhance the appeal of inter-city passenger rail in Texas. Potential service enhancements or changes included:

- *Increased service on the Sunset Limited* – Daily passenger service on the Sunset Limited would expand the usefulness of this system by providing the convenience of regular daily departures. The initial success of the addition of service on the Texas Eagle, as evidenced by increased ridership at Texas stations, provides support for this type of investment. In addition, improvements to the tracks to increase speeds from their current average speed of less than forty miles per hour would significantly improve the viability of this service.
- *Re-routing of the Sunset Limited* – As mentioned previously, Amtrak has considered plans to re-route the Sunset Limited line between Houston and El Paso via San Antonio to instead run from Houston to Dallas-Fort Worth before continuing to El Paso. The shift in routes would reintroduce rail service between Dallas and Houston and include new stops in several mid-sized West Texas markets, including Abilene and Midland-Odessa.
- *Passenger rail link between Dallas/Fort Worth and Meridian, Mississippi* – Amtrak would like to strengthen southern rail links to the Northeast by providing connections to Amtrak's Crescent route from New York to New Orleans. Amtrak was seeking $40 million to invest in track upgrades on the Kansas City Southern line between Dallas and Meridian to allow increased track speeds conducive to passenger service. The addition of this service would greatly improve passenger rail accessibility from Dallas/Fort Worth to other urban centers in the southeastern United States such as Atlanta and also to east-coast destinations such as Washington, DC.
- *Fort Worth to Denver service* – Several West Texas communities have expressed their support for a proposed Amtrak route serving the Panhandle of Texas. The potential service, called the "Caprock Express," would run from Fort Worth through the cities of Abilene, Lubbock and Amarillo en route to La Junta, Colorado Springs and Denver, Colorado.
- *San Antonio-Laredo-Monterrey service* – Amtrak considered adding passenger rail service (Aztec Eagle) between San Antonio and Monterrey as part of its 2000 Network Growth Strategy. Amtrak held discussions with Mexican authorities

concerning alignment and right-of-way issues. Monterrey is a leading industrial and corporate center in Mexico with strong historic, economic, and social ties to Texas.

Whether any of these potential routes and service improvements will still be considered in the future rests on whether Amtrak will be able to attain enough financial stability to be able to plan for future expansions. Amtrak received $1.2 billion in funding for FY2005 and may receive $1.4 billion for FY2006, consistently less than the amount of revenue requested to make needed improvements, let alone provide for system growth. The Amtrak Reform Council recommended a drastic restructuring of Amtrak to Congress, which included eventual privatization of many routes. The plan received strong criticism throughout the rail industry, as well as from many members of Congress. The future of Amtrak in Texas rests largely in the funding and system planning decisions facing Congress regarding the future of long distance inter-city passenger rail in the United States. Secretary Mineta has publicly announced that States wishing to retain Amtrak service will have to fund a greater percentage of those services in the future.[8]

While Amtrak's annual ridership in Texas was over 273,000 in 2004, it remains a small component of the Texas intercity transportation network. Despite sizable gains in the state's employment and population base, Amtrak has experienced only moderate growth in its Texas ridership. This indicates that competing modes (i.e., air carriers and motor vehicles) are capturing the increases in total demand for inter-city travel in Texas and that rail's market share will likely remain small without improved service and frequencies.

3.5 - Intercity Commuter Rail Services and Feasibility Studies

Currently, the only operational intercity commuter rail service in the state is the Trinity Railway Express between Dallas and Fort Worth. Three other urban or intercity commuter rail services are in various stages of planning or study:

- An Austin-San Antonio intercity commuter rail system;
- An urban line from downtown Austin to the suburb of Cedar Park that will be developed by Capitol Metro, the Austin transit agency; and
- A potential commuter rail system serving some of the suburbs in the Houston area.

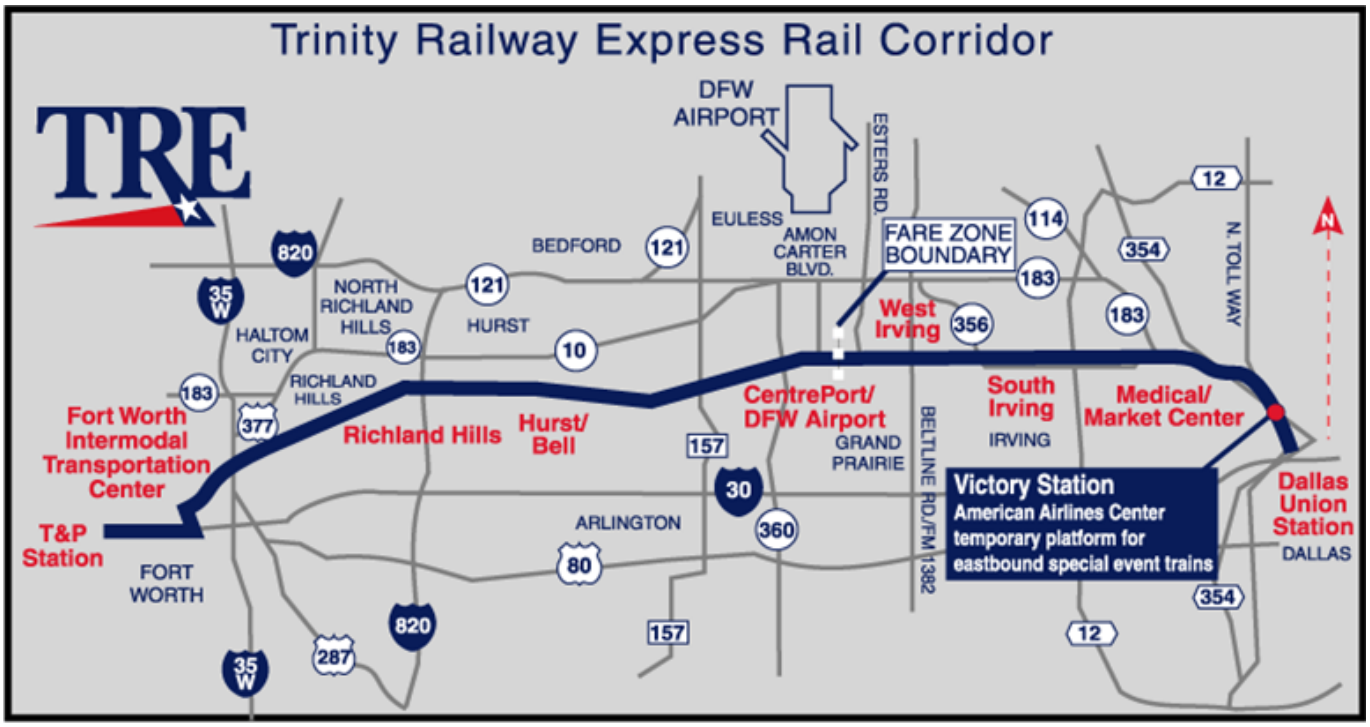
Existing and Proposed Commuter Rail Systems

Trinity Railway Express—Dallas and Fort Worth

The Trinity Railway Express (TRE) commuter rail service is a service provided by Dallas Area Rapid Transit (DART) and the Fort Worth Transportation Authority (the "T"). The map in Figure 3.5 shows the TRE system. Phase one of the TRE (10 miles) was

opened in December 1996, providing service between Dallas and Irving. The system now covers approximately 35 miles serving nine permanent stations and one special event station at the American Airlines Center sports arena. Ridership in FY 2004 totaled 2.2 million passenger trips, while average weekday ridership totaled 7,700[9]. The TRE represents one of the most significant joint services between the two largest metroplex cities since the construction of Dallas-Fort Worth International Airport in the early 1970s.

Figure 3.5 Trinity Railway Express System Map



Source: TRE Website, www.trinityrailwayexpress.org/map.html.

Beyond the operational TRE commuter rail line, DART purchased 70 miles of rail lines on which it can expand operations in the future, bringing the right of way total to 250 miles. The lines were sold by the Union Pacific and could provide links to Denton, Sherman, and Rockwall. DART has no current plans to extend service to these locations, but maintaining the option to expand their network will become increasingly important as the metroplex continues to grow. DART already owns lines to Duncanville, Fort Worth, and Wylie.[10] The lines run parallel to major roadways in the region (I-35, US 75, and I-30) and commuter rail may someday be an option for expanding capacity along these corridors.

The North Central Texas Council of Governments (NCTCOG) has been working on a comprehensive Regional Rail Corridor Study in partnership with DART, the T and the Denton County Transportation Authority (DCTA). The study's goal is to provide data and recommendations to decision makers on the best way to implement expanded passenger rail and other transit services in 11 corridors around the Dallas-Fort Worth metroplex.

Austin-San Antonio Intermunicipal Commuter Rail District

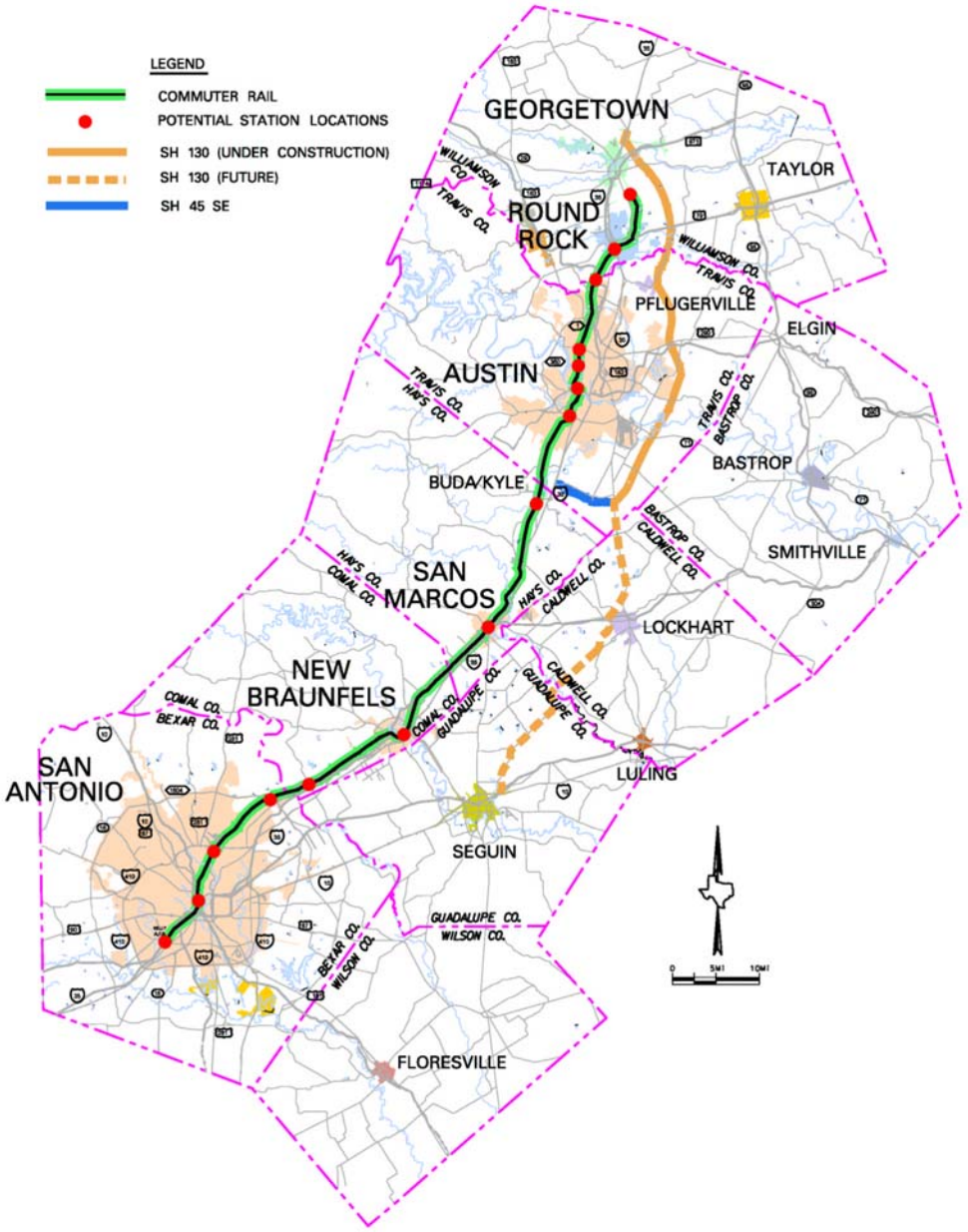
Commuter rail can be one method of mitigating congestion in fast-growing corridors. Growing congestion, following years of leading the nation in economic and population growth, is resulting in steadily worsening traffic delays in Texas' metropolitan areas. In the Austin-San Antonio corridor, traffic delays may cause economic losses not only for commuters and local businesses, but also for national shippers sending goods along this corridor (by truck and rail) to and from sites in Mexico. With several major universities (including the University of Texas at San Antonio, Southwest Texas State University in San Marcos, and the University of Texas at Austin) lining the corridor, traffic delays are also problematic for the region's students. VMT totals on this corridor are predicted to rise substantially through 2025, further exacerbating the problems caused by congestion.

In 1997, the 75th Texas Legislature passed a law allowing the creation of an "inter-municipal commuter rail district" to study and, if desired, create and operate a commuter rail system in the corridor between Austin and San Antonio.[11] The legislation allowed a Commuter Rail District to be formed if the cities of Austin and San Antonio as well as Travis and Bexar Counties adopted resolutions calling for district formation. Other cities and counties along the route were also permitted to join the district.

In 1999 an initial feasibility study was conducted by the federal, state and regional transportation planning entities to determine whether commuter rail between the two metropolitan areas was reasonable and, if so, to develop a cost estimate for constructing the system. It concluded that commuter rail in the corridor was both technically and financially feasible based upon the premise that construction of a second mainline track would be constructed for the commuter rail service in the existing Union Pacific freight rail right-of-way. The estimated cost for this route and configuration was $475 million in 1998 dollars.

The Austin-San Antonio Intermunicipal Commuter Rail District (ASA-ICRD) was formed in November 2002 with a fourteen-member board representing regional transportation planning entities. The Federal government provided $5.625 million in TEA-21 funding for preliminary engineering and planning studies along the corridor, and to update the 1999 feasibility study in order to reflect current regional desires on how best to develop such a system. (Fig. 3.6)

Fig. 3.6 Austin–San Antonio Commuter Rail Feasibility Study Corridor



Source: Austin-San Antonio Intermunicipal Commuter Rail District, 2005

Interest has been expressed in rerouting through freight traffic moving along the corridor, leaving the existing track to serve local freight customers and develop commuter rail. Ideas have included constructing a rail freight line in or near the proposed SH-130 corridor, or rerouting the overhead freight to the UP line running east of the I-35 corridor, which would require a significant investment in infrastructure improvements and bypasses around smaller rural communities. Either of these alternatives could enable implementation of an efficient passenger rail system in the existing alignment. These options are being actively discussed by a Governor's task force which includes TxDOT, UP, the ASA-ICRD, and local elected representatives.

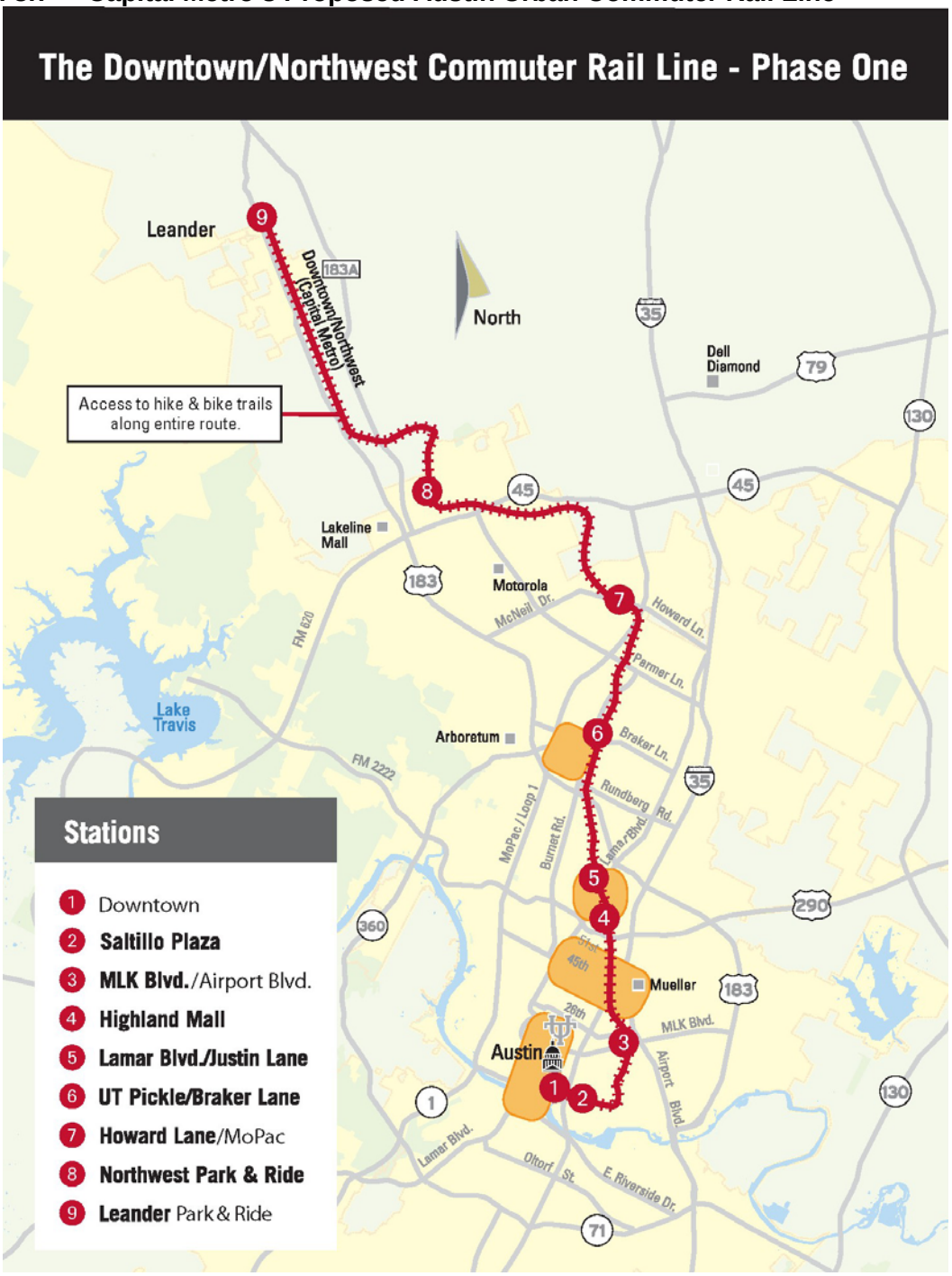
Both the Capital Area Metropolitan Planning Organization (CAMPO) and the San Antonio-Bexar County Metropolitan Transportation Planning Organization (SABCMPO) have included consideration of a commuter rail system between Austin and San Antonio as a component of their 2025 long-range transportation plans and have approved the locally preferred alternative presented by the ASA-ICRD.[12] Consultants for the ASA-ICRD updated the feasibility study in 2004 and are preparing the necessary planning and preliminary engineering documentation in order to submit a New Starts application to the Federal Transit Administration.

Capitol Metro's Urban Commuter Rail Line

In November, 2004, Capital Metro received voter approval to develop a commuter rail line in the Austin metropolitan area. (Fig. 3.7) The Urban Commuter rail line is part of Capital Metro's "All Systems Go" transit projects, a long-range vision for the region that combines rail and bus solutions to address the area's transportation challenges.

The urban commuter rail service will initially operate on Capital Metro's existing 32-mile Northwest Line, which is currently providing freight services to some area businesses. Commuter rail services can conceivably be operating on the line by 2008, and will not require any new taxes or long term borrowing to implement. Capital Metro sought public input to the All Systems Go plan prior to the voter referendum, and is coordinating planning, facilities, and services with TxDOT, the Austin San Antonio Intermunicipal Commuter Rail District, and the Central Texas Regional Mobility Authority.

Fig. 3.7 Capital Metro's Proposed Austin Urban Commuter Rail Line



Source: Capitol Metropolitan Transportation Authority, 2005

Houston-Rosenberg Commuter Rail Feasibility Study

The Houston-Galveston Area Council (HGAC), in cooperation with the TxDOT Houston District and TPP-M, initiated a commuter rail feasibility study along the U.S. 90A corridor, which travels from Houston into Fort Bend County through the cities of Stafford, Missouri City, Sugarland, Richmond and Rosenberg. The eastern end of the study corridor could link-up with the southern end of Harris County Metropolitan Transit Authority's METRORail light rail project near the Astrodome and Reliant Stadium. This corridor has seen dramatic increases in congestion over the past decade, with average vehicle speeds in the afternoon averaging around 15 mph. The study was completed in April, 2004, and discusses the feasibility of five alternatives to implement commuter rail services on UP's "Sunset Route" between Houston and Rosenberg, which generally parallels U.S. 90A. More information on this project is also included in Chapter 5.

Harris County Commuter Rail Analyses

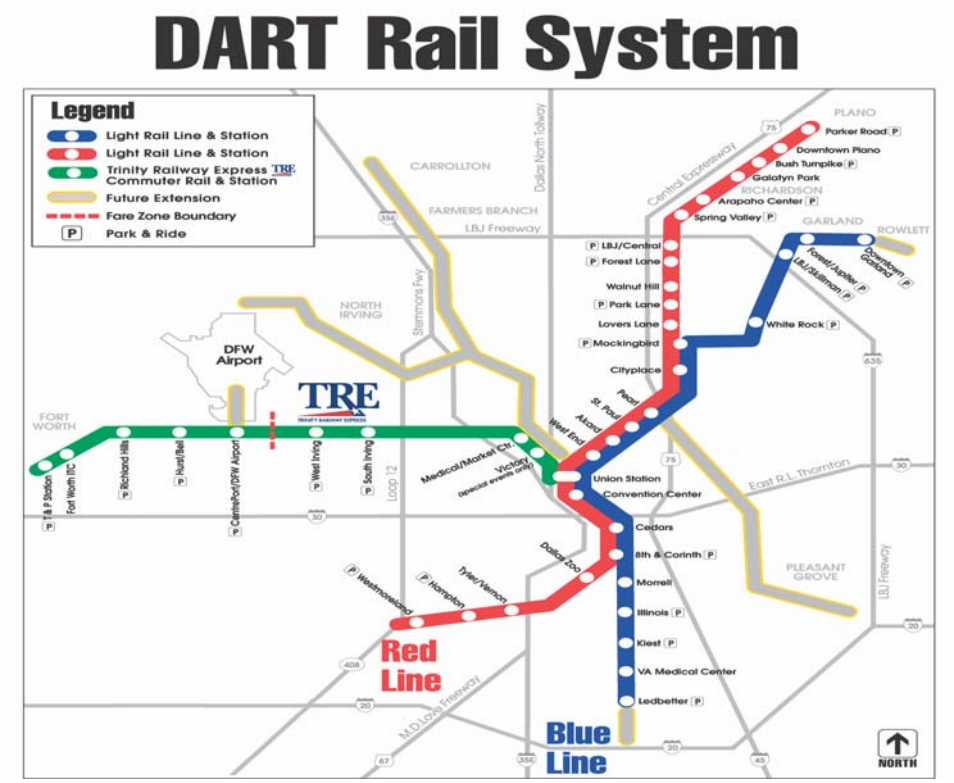
The TxDOT Houston District commissioned a major investment study (MIS) for the US 290 corridor which was completed in January 2003. This was the first MIS in Texas to include a rail component in its preferred alternative[13]. The Harris County Public Infrastructure Department then commissioned a preliminary study to explore the potential for developing commuter rail systems along both the US 290 and SH 249 corridors in northwestern Harris County. That study was completed in December 2003, and its primary focus was to examine the physical, operational and relative cost characteristics of commuter rail operations in those corridors as well as the US 90A corridor. The study determined that the existing rail network in these corridors could be revamped to consolidate freight operations in a more efficient manner and allow the development of commuter rail services to improve Houston's mobility. TxDOT is now working cooperatively with Harris County, the Houston Galveston Area Council, surrounding counties and cities, the Class 1 railroads, and other interested freight stakeholders, to conduct a comprehensive freight operations analysis of the Houston region. The study is being conducted by TxDOT consultants with the assistance of the Texas Transportation Institute, and will assist regional transportation entities understand how improved freight operations can assist with regional mobility, commuter rail development, safety and environmental quality.

3.6 – Local Light Rail Services

Currently local light rail services in the state are limited to the cities of Dallas and Houston, with passenger rail services in these cities operated by the local transit agencies. Information in this section is provided for informational purposes to illustrate the connections provided between intercity and regional passenger rail services to municipal light rail transit services. In operation for only a few years, passenger rail service in Dallas has already proven to be successful, with high ridership, strong community support, and increasing property values in the light rail corridors. Houston's

7.5-mile light rail passenger line opened in January, 2004. Other cities have considered light rail or other rail passenger options. Some of these will be discussed in more detail in Chapter 6. Existing and on-going light rail projects within specific urban areas are discussed below.

Fig. 3.8 Dallas Area Rapid Transit (DART) Rail System



Source: DART, July 2004

Dallas Area Rapid Transit (DART)

The DART light rail system is comprised of two lines: the Red Line and the Blue Line. DART's Red Line operates along the North Central Expressway from Plano to Westmoreland in western Oak Cliff. The Blue Line runs south from downtown Garland to Ledbetter in southern Oak Cliff. Both lines serve all downtown Dallas stations. Figure 3.8 shows a map of the DART system as well as its connection to the Trinity Railway Express (TRE) commuter rail line. DART service operates from approximately 5 a.m. to midnight with trains running about every 10 minutes. The system consists of 44 miles of rail serving 34 stations. The fleet is comprised of 95 light rail vehicles, and ridership totals approximately 13.5 million passenger trips per year. The average weekday ridership was 55,000 passengers in 2004.

Free parking is available at most stations and all are served by the DART bus system to make transfers between trains and buses uncomplicated. The current long-term funding program will provide light rail lines to Fair Park and Market Center by 2010, Love Field, Pleasant Grove, Carrollton and Farmers Branch by 2011, and Las Colinas and Dallas/Fort Worth International Airport by 2014.

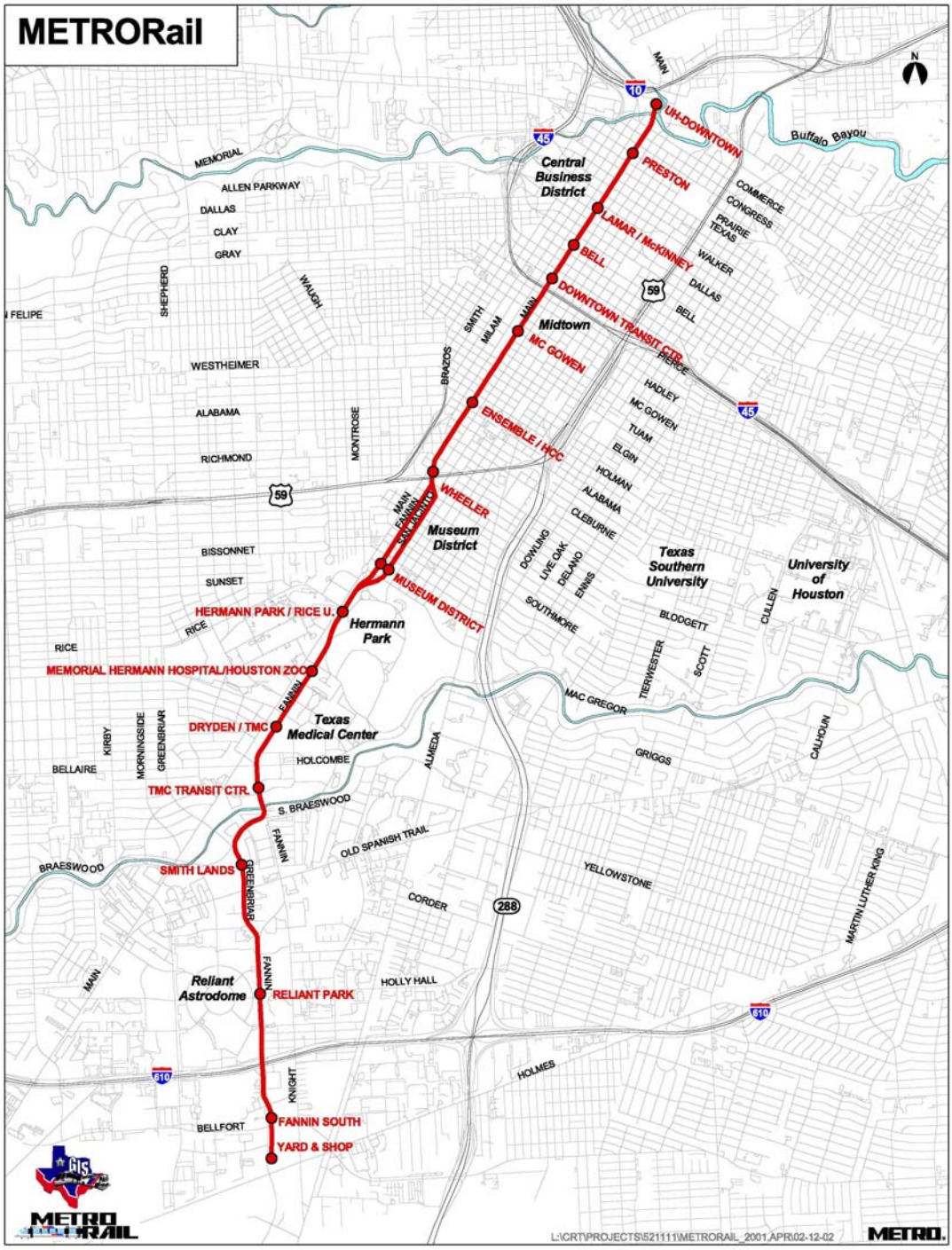
DART's board of directors had to revise their schedule of programmed LRT extensions due to multiple year reductions in sales tax receipts. As mentioned previously, a $750,000 commuter rail study was paid for by the cities of Dallas and Fort Worth, the NCTCOG, the Fort Worth Transportation Authority, and DART. The study was coordinated with the Fort Worth and Dallas districts of TxDOT to ensure that rights-of-way and access points would be preserved in future highway projects in order to allow rail lines to pass underneath roadways.

Houston/Harris County Metropolitan Transit Authority Light Rail System

The Metropolitan Transit Authority of Harris County, Texas (METRO) opened a 7.5 mile light rail project in January 2004 that provides service from downtown to just south of the Astrodome and the new Reliant Park in Houston. The route for this service is shown in Figure 3.9.

The line has 16 stations, and uses 18 electric light rail vehicles with a capacity of 200 riders each. 245,000 employees and 32,000 residents living in proximity to the corridor as well as those attending sporting events and other visitors to the area are expected to provide strong ridership demand on the METRORail route.[14] Average weekday ridership for this service during June 2005 was 34,770, a 30 percent increase from the same month in 2004 and a 187 percent increase over METRORail's opening month figures. Original estimated projections were that weekday ridership would rise to 40,000 passengers per day by 2020[15].

Fig. 3.9 **Houston METRORail**



Source: Harris County Metropolitan Transit Agency

To improve safety, add reliability, and increase speeds, the project was built in semi-exclusive or limited access diamond lanes along most of the in-street route and has priority signalization at intersections. However, a high number of vehicular-transit accidents occurred after initial operations began, with 26 collisions during the first quarter of operations. METRO evaluated their signaling system and conducted a public awareness campaign to address this problem. The current downtown to Astrodome light rail system has three bus transit centers to facilitate distribution of passengers to other transit services.

METRO is also studying three additional corridors for advanced transportation options in its 2025 Mobility Plan. The METRO Solutions Transit System Plan, adopted in August 2003, calls for expanding light-rail service to a total of 16.3 miles to serve Uptown/Galleria, Westpark, East End, Magnolia, Gulfgate, and Houston and Texas Southern universities. Phase II of the METRORail system would also develop 28 miles of commuter rail[16]. METRO's plans include seeking approval for approximately $700 million to fund improvements to the rail system. The Houston METRORail light rail transit lines provide a transportation alternative in one of the most economically vital and densely settled cities in Texas.

3.7 - High-Speed Rail Initiatives

In addition to conventional Amtrak service, intercity commuter rail service, and local light rail service, several inquiries into the planning of advanced rail transportation systems that would operate at much higher speeds over longer distances have taken place. Research conducted in the early 1990s to determine the feasibility of high-speed rail (HSR) in Texas found that a system of faster trains serving the state's largest cities could potentially generate significant passenger volumes. Initial ridership projections for total inter-city travel between the metropolitan areas of Austin, Dallas/Fort Worth, Houston, and San Antonio (the Texas Triangle) using all modes were predicted to total 45.5 million travelers by 2010. Several issues associated with HSR in Texas are described below. Additional information on this topic may be found in Chapter 5.

The Texas TGV Initiative

In 1989, the Texas legislature created the Texas High Speed Rail Authority (THSRA) as a separate state agency to determine whether high-speed rail in Texas was feasible. THSRA was to determine the best qualified applicant for award of a franchise to design, build, and operate a high-speed rail service in the state. A 50-year franchise was awarded in 1991 to a consortium of businesses, designated as the Texas TGV (TTTGV) Corporation. According to ridership projections generated for the TTGV Corporation, the potential share of high-speed rail in the Texas Triangle between Houston, Austin/San Antonio, and Dallas/Fort Worth was 11.9 million passengers, or one-quarter of the total intercity travel market.[17] A planned securities offering in the fall of 1993 failed when one of the backers withdrew its commitment and the franchise agreement with TTGV was

subsequently rescinded in 1994. While demand appeared to justify high-speed rail services in the state, funding issues and other pressures prevented the project from moving forward and the THRSA was formally abolished in 1995.

The TTGV initiative demonstrated the potential for high-speed passenger rail service, showing that demand existed for high-speed train service between Texas' largest cities. Amtrak officials corroborated the TTGV analysis, believing that there is a demand for high-speed passenger rail services in Texas.[18]

By the late 1990's, the FRA began to encourage the incremental development (largely through safety improvements) of faster passenger train systems through the designation of "High-Speed Rail Corridors" (HSRCs) around the country, including two such corridors in Texas. Currently the FRA is encouraging states to cooperatively determine and fund planned improvements along their corridors.

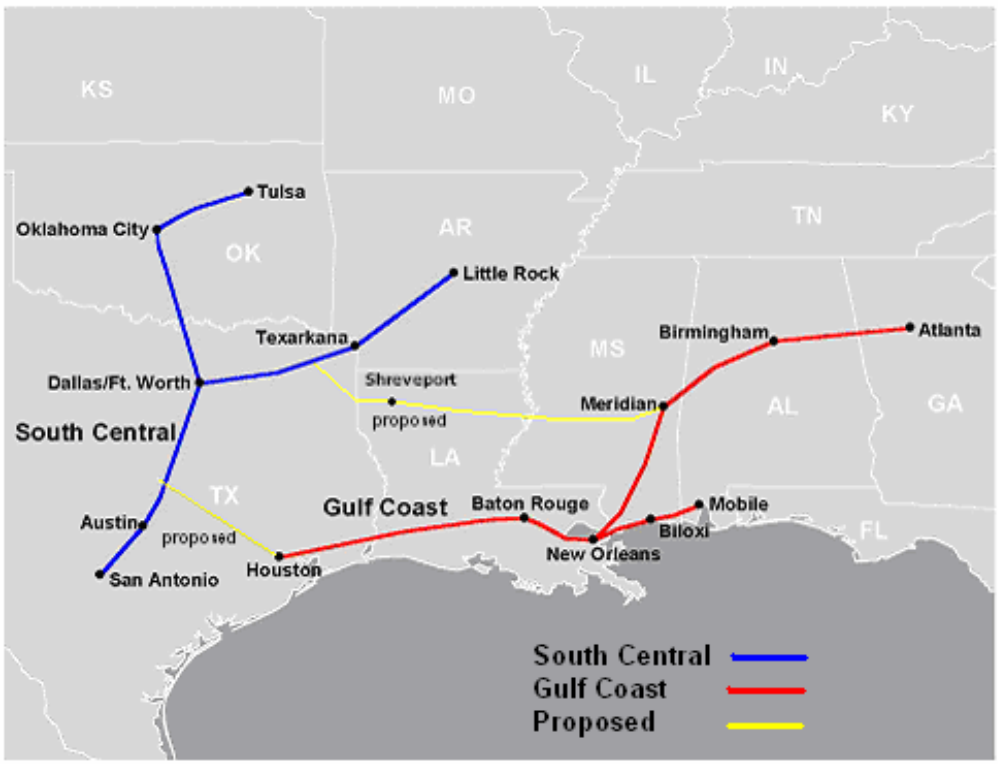
Federally-Designated High-Speed Rail Corridors

The two rail corridors in Texas that have received federal designation as future high-speed rail corridors, the "South Central" and "Gulf Coast" are shown in Figure 3.10. The high-speed rail designation from the FRA allows Texas to apply for limited federal funds to make capital improvements to the existing rail lines, thereby improving safety and mobility with the long-term goal of improving track speeds for passenger rail.

The South Central High-Speed Rail Corridor (stretching from San Antonio through Dallas-Fort Worth and on to Texarkana and Little Rock on one branch and from Dallas-Fort Worth to Tulsa on the other) essentially follows the same routes as Amtrak's Texas Eagle and Heartland Flyer services. The Gulf Coast High-Speed Rail Corridor runs east from Houston to Beaumont, New Orleans, and Mobile. A separate branch of the Gulf Coast High-Speed Corridor connects New Orleans with Atlanta.

In June 2003, TxDOT asked FRA to designate an extension of the South Central Corridor that would extend from the Houston area through Bryan/College Station to the Killeen/Temple area, connecting the two Texas corridors. The FRA declined to designate the extension based upon the agency's vision for the future of intercity passenger rail. The Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) revised the language dealing with high-speed rail corridor development such that program funds will only be available for corridor development versus planning activities. There have also been discussions about connecting the two Texas corridors via an extension from Meridian, Mississippi through Shreveport, Louisiana to Dallas. Both of these proposals are discussed further in Chapter 5.

Fig. 3.10 Federally Designated High Speed Rail Corridors in Texas



Source: Texas Transportation Institute and TxDOT

Amtrak considers the Northeast Corridor as a model for how it would like the rest of its national system to perform.[19] Looking at the designated Texas corridors, investment requirements to reach Northeast Corridor service levels would be significant. Upgrades that would need to be considered to bring Texas railroad tracks up to these standards would include:

- improvements to tracks, ties, rail condition and drainage systems;
- double tracking or addition/lengthening of passing sidings;
- implementation of more advanced grade crossing technologies or the creation of "sealed corridors" through the removal of all grade crossings;
- improved train control/operating systems;
- new or refurbished rolling stock; and,
- renovated stations to enhance train dwell times.

In the designated corridors, TxDOT may apply for project funding to improve highway-railroad crossings, which would increase safety for motorists and enhance the movement of both passenger and freight trains. The types of projects potentially eligible for federal funding include adding or replacing signals and constructing highway-rail grade separations along the rail corridor. It is anticipated that these improvements will yield decreases in travel times and thereby increase passenger ridership. By utilizing existing rail corridors and infrastructure, the "high-speed" rail concept offers cost-effective transportation that has relatively low environmental impacts.

3.8 - Trends in Rail Passenger Service

A number of trends in passenger rail service have influenced passenger train ridership in Texas. These include changes in stations served, the creation of intermodal transportation centers with passenger rail access in certain cities, changes in intercity ridership, and the creation of new commuter and light rail systems.

Changes in Stations Served and the Cessation of Dallas-Houston Service

Changes in Amtrak's services resulted in the closing of some stations and the reopening of others. Table 3.1 provides a list of stations that have been affected by changes to Amtrak's operations since 1994. The Bryan/College Station, Corsicana, and Hearne closures corresponded with the suspension of rail service on the Texas Eagle between Houston and Dallas in 1994. The Texas Eagle used to split into two trains in Dallas, with one going to San Antonio and the other to Houston. The opening of the Gainesville station corresponded with the inauguration of the Heartland Flyer service between Fort Worth and Oklahoma City.

Table 3.1 **Amtrak Station Openings and Closings 1994 - 2000**

Station Openings	Station Closings
1996 Mineola	1994 Bryan/ College Station
1997 Sanderson*	1994 Corsicana
2000 Gainesville	1994 Hearne

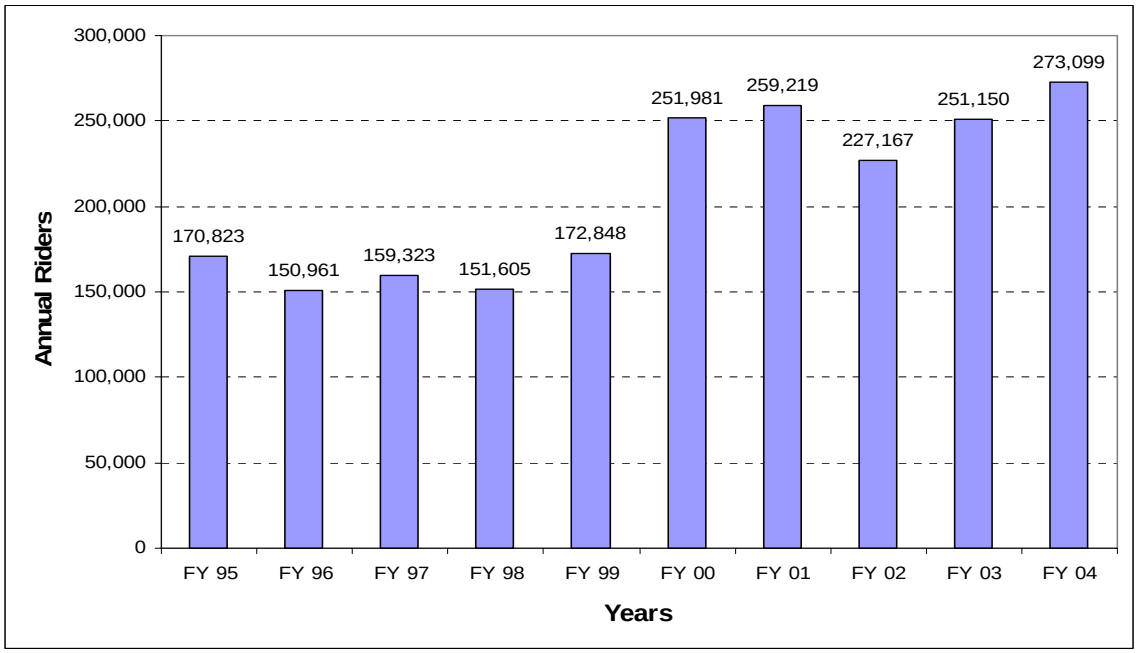
* Reopened after closing in 1994.

Construction of New Intermodal Transportation Centers

Several Texas cities (San Antonio, San Marcos and Beaumont) have been considering the development of intermodal passenger transportation centers. The City of Fort Worth opened an intermodal transportation center at one of the Dallas Area Rapid Transit's

Trinity Railway Express (TRE) stations. The center accommodates Amtrak, the TRE, the Fort Worth Transportation Authority's (the "T") bus service, and retail sites. The station is a significant enhancement for the economic and transportation renovation of Fort Worth and helps to alleviate regional traffic congestion.

Fig. 3.11 Texas Amtrak Ridership FY 95 – FY 04



Source: Derived from data provided by Amtrak Government Affairs, 2005.

Changes in Intercity Service Ridership

Between 1994 and 2004, the number of passengers carried annually by intercity passenger rail in Texas reflected Amtrak's decisions to cut back and then later add train service in the state. A fall-off in ridership resulted in the mid-1990s as Amtrak reduced services in an effort to cut costs and improve its financial performance. This dip in ridership is shown clearly in Figure 3.11.

During this time, Amtrak presented TxDOT with a shared funding cost proposal for the Texas Eagle service, however no state-level funding source was available. The "reduction in service" strategy faltered as revenues fell more than anticipated and expected cost savings were insufficient to compensate for the decline in revenue.[20]

Table 3.2— Texas Amtrak Ridership – By Station and Route – FY 95 – FY 04

Route	Station	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	FY04
Texas Eagle	San Antonio	16,191	15,968	24,139	24,310	20,712	28,608	30,277	24,651	29,281	31,440
	San Marcos	869	793	754	757	797	1,560	2,055	1,800	2,646	2,847
	Austin	10,449	10,112	9,287	10,245	11,052	15,598	18,595	15,991	18,646	20,934
	Taylor	1,439	1,351	1,201	859	766	1,575	1,944	1,648	2,590	3,248
	Temple	2,985	2,738	3,126	5,487	3,773	5,679	7,215	6,660	8,006	10,431
	McGregor	1,278	1,301	1,491	1,310	1,242	2,004	2,080	2,251	1,776	2,444
	Cleburne	669	616	654	545	717	1,279	1,524	1,398	1,531	1,614
	Fort Worth	10,064	9,643	10,600	9,042	13,392	25,543	28,700	24,436	28,845	32,611
	Dallas	36,673	23,301	23,586	22,955	23,547	30,598	34,074	29,782	31,981	33,409
	Mineola	--	1,312	1,787	1,473	1,470	3,093	2,902	2,440	2,308	3,923
	Longview	7,442	18,297	17,359	12,377	12,445	14,551	15,172	16,926	20,720	23,692
	Marshall	4,147	3,247	2,633	2,346	2,437	3,240	3,128	3,144	3,696	5,076
	Texarkana	5,306	3,884	4,868	4,306	4,397	5,567	5,472	4,772	4,721	5,531
Total – Route		**97,512**	**92,563**	**101,485**	**96,012**	**96,747**	**138,895**	**153,138**	**135,899**	**156,747**	**177,200**
Sunset Ltd.	El Paso	17,729	14,977	11,126	12,388	13,680	13,147	12,015	9,169	10,165	9,222
	Alpine	2,503	2,284	2,054	1,868	2,083	2,468	2,210	1,631	1,796	1,665
	Sanderson	--	--	223	190	364	289	243	153	194	148
	Del Rio	1,383	1,207	1,306	1,031	1,472	1,677	1,232	970	1,135	1,140
	San Antonio	16,932	15,994	19,952	22,413	14,636	15,782	14,766	12,711	15,401	15,319
	Houston	32,186	21,453	20,844	15,633	15,843	16,978	17,206	16,216	19,661	16,177
	Beaumont	2,578	2,483	2,333	2,070	2,506	2,295	2,416	1,678	1,708	1,519
Total – Route		**73,311**	**58,398**	**57,838**	**55,593**	**50,584**	**52,636**	**50,088**	**42,528**	**50,060**	**45,190**
Heartland Flyer	Fort Worth	--	--	--	--	19,827	44,123	40,875	36,942	35,362	40,469
	Gainesville	--	--	--	--	5,420	16,327	15,118	11,798	8,981	10,240
Total – Route						**25,247**	**60,450**	**55,993**	**48,740**	**44,343**	**50,709**
Total – Texas		**170,823**	**150,961**	**159,323**	**151,605**	**172,848**	**251,981**	**259,219**	**227,167**	**251,150**	**273,099**

Denotes shared route station

Source: Amtrak Government Affairs, June 2004 and August 2005

The inauguration of the Heartland Flyer to Oklahoma City (June 1999) and the expansion of the Texas Eagle to daily service (May 2000) helped boost Amtrak ridership figures in Texas causing a rebound that exceeded those of the early 1990s. Overall, the number of passengers using Amtrak's services in Texas grew by 58 percent between 1999 and 2004 (Table 3.2). While ridership on the Texas Eagle has been growing, the east-west Sunset Limited route has not yet been able to rebound from a significant reduction in its annual riders since FY 96, and the Heartland Flyer has had an average annual ridership of 52,000 over it's first full five years of service.

Future Commuter and Light Rail Ridership

The TRE and the light rail transit system operated by DART are attracting increasing ridership in the Dallas-Fort Worth area. Since its inauguration in 1996, ridership on DART's Light Rail Transit (LRT) system has grown to an average of 55,300 riders per weekday (FY 2004) and carried 16.5 million riders.[21] Average daily ridership on the DART LRT grew quickly following the system's opening in 1996.

Planned expansions on the light rail system into surrounding areas are expected to result in a marked increase in passenger ridership and greater connectivity between the transit and commuter rail systems. The TRE has also had strong ridership, with current average weekday ridership of 7,700 passengers, and an annual equivalent of 2.2 million passenger trips per year.

3.9 - Issues Affecting Passenger Rail in Texas

Rail Line Abandonment

Rail abandonment has the potential to affect passenger rail service as both freight and passenger trains must increasingly share common infrastructure, resulting in a greater risk for conflicts and delay. One way to combat the abandonment of railroad rights-of-way is to find agencies that are willing to purchase rights-of-way in order to keep them intact for future service. In the case of the TRE, a freight right-of-way between Dallas and Fort Worth, that was going to be abandoned, was purchased with Federal Transit Administration assistance long in advance of service start-up. Capital Metro in Austin has also owns and leases out operations of a freight right-of-way to protect this existing track as a resource which has been approved as a commuter rail corridor in its service area.

The limited amount of passenger rail service in Texas has caused the effects of abandonment to be negligible to date. However, the states' increasing population and traffic congestion have served to increase public awareness of the benefits of rail transit as a transportation option. Acquisition of abandoned freight rail rights-of-way is one of the most effective ways to preserve this option into the future, especially for lines that are in and nearby growing urbanized areas.

Freight Rail Conflicts

Increasing conflicts with freight rail are a serious concern affecting both passenger and freight rail service. Statewide statistics indicate that while total rail line mileage is decreasing, traffic and total tonnage are increasing. NAFTA-related trade and congestion along the I-35 corridor have contributed to an increase in freight rail traffic, which has affected passenger rail services by delaying Amtrak's Texas Eagle between San Antonio and Fort Worth.

Increases in freight traffic on existing routes will also limit the potential to operate faster trains on those routes designated as High-speed Rail Corridors in Texas. The South Central High-Speed Rail Corridor follows track in the I-35 corridor between Dallas and San Antonio where an abundance of freight traffic can create delays for passenger trains. The provision of high-speed rail services along these tracks would require substantial investment to prevent similar delays. Rail capacity constraints in San Antonio, with large numbers of freight trains moving inter-continental traffic east-to-west and NAFTA traffic north-to-south, also slow the passenger trains. In order to increase passenger rail speeds in San Antonio, a rail configuration that better separates freight rail from passenger trains may need to be developed.[22] Terminal operations in Fort Worth and Dallas could also benefit from a better separation of passenger and rail trains, perhaps through the building of dedicated passenger rail tracks.[23]

In other parts of the state, freight rail needs have taken precedence and at times have resulted in a deterioration of passenger rail service. Public-private partnering arrangements being discussed by the State of Texas and the railroads could eventually lead to improvements in the statewide rail freight system. Proposed improvements could maximize the safety of citizens, provide increased capacities for freight and provide the opportunity to open corridors for new passenger rail development and improvements to existing passenger rail services.

Service Reliability

The service reliability of Amtrak in Texas also depends upon Amtrak's long-distance trains from Chicago, Los Angeles, and Orlando not encountering major delays on the lengthy expanses they must travel before reaching Texas' borders. A mechanical problem with a track or a scheduling conflict with a freight train can impede their progress. Once a passenger train is off-schedule, other delays become more likely as priority must be given to freight trains and other passenger trains that are running on time. An Amtrak train that has encountered delays en-route to Texas, such as the Texas Eagle coming into the state from Chicago, may keep passengers waiting for several hours at stations such as Fort Worth before they can proceed to Austin or San Antonio. In San Antonio, delays are caused by the routing and track configuration at the Amtrak station. This results in difficulties when switching passenger cars from the southbound Texas Eagle to the westbound Sunset Limited. Heavy demand on UP lines along the I-35 Corridor, which handle both passenger trains and steadily increasing freight traffic, can also cause dispatching difficulty leading to passenger rail delays.

Track Speeds

Because of Amtrak's dual mandate to both provide a national rail system and be financially self-sufficient, it lacks the necessary funds to adequately upgrade its Texas routes to performance standards that would attract increased ridership. Amtrak's schedules and long travel times make it difficult for passenger rail to serve as a viable option for business travelers in Texas. For example, the Sunset Limited has an average operating speed of less than 40 mph, covering more than 800 miles between Houston to El Paso. This route takes more than 21 hours to traverse. At this pace, Amtrak customers are drawn from leisure travelers and those either not owning cars or averse to flying rather than those looking for a comparable travel alternative. Upgrading the condition of Texas rail infrastructure could improve the track speeds that are attainable making intercity rail transportation a more attractive and competitive transportation mode.[24]

Initiatives to create high-speed rail corridors and accompanying improvements would cut travel times on passenger rail routes resulting in increased ridership. Due to the distances involved in Texas travel, the greatest impacts would be felt on high-demand intercity trip corridors. The designation of and commitment to upgrading Texas high-speed rail corridors should provide access to resources to improve speeds on key stretches for passenger rail.

Highway-Rail Grade Crossings

Traffic conflicts between trains and automobiles at highway-rail grade crossings also slow passenger and freight trains throughout Texas. The heavily used rail line between San Antonio and Austin that is designated as a higher speed intercity passenger rail corridor is an example of this problem. There are more than two-dozen grade crossings in the City of San Marcos alone. These grade crossings require trains and vehicular traffic to stop or slow down, increasing travel times and creating congestion, as well as creating the potential for highway/rail conflicts and accidents. Train speeds can be hindered by an elevated number of grade crossings in an area. Although not required to do so by law, train crews or rail company policies may direct slower operations in such locations due to heightened concern about crashes. Additional information on highway-rail grade crossings is included in Chapter 4 – Rail Safety.

Train Frequency/Scheduling Limits Flexibility

Amtrak passengers in Texas have little flexibility in choosing their departure and arrival times due to specific schedules and the lack of additional frequency. For example, the timing of the Heartland Flyer works well for business travelers coming from Oklahoma City to Fort Worth, as they can make the round trip on the same day. This convenience is missing for travelers from Texas who need to stay a minimum of two nights in Oklahoma to make the round trip by train.

Scheduled trip times are also not advantageous for people wishing to take Amtrak between Houston and San Antonio. Passengers on the Sunset Limited leave and arrive at San Antonio in the wee hours of the morning only 3 days per week. These schedule times are the result of the Sunset Limited being a national transcontinental service that is not optimized to meet the inter-city regional transportation needs of Texans. For Amtrak services to meet the needs of Texans, schedules need to be developed with passenger utility in mind, providing them with greater convenience and flexibility in departure and arrival times.

Texas has a need for local and regional initiatives to implement additional passenger services and improve existing services. Amtrak provides limited services in Texas, yet ridership on the Texas Eagle has increased and remains steady on the Heartland Flyer. This has occurred despite the lack of being able to compete with other modes of travel on the basis of time per trip. Further ridership increases are unlikely without additional service offerings in both frequency and improved speeds.

DART and TRE have demonstrated that the combination of light rail and commuter rail operations are viable choices for the travelling public. Houston's new light rail system, and further considerations to develop commuter rail in the future are strong indicators that Texan's like having transportation options. Supporting this theory are the Austin and San Antonio efforts to design and implement urban and regional commuter rail systems. Completed, ongoing, and proposed rail projects in Texas firmly demonstrate the transportation communities' commitment to providing intercity passenger rail and rail transit options where feasible and where implementation of this transportation mode can reduce congestion, delay, and pollution.

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[1] VMT forecast for Texas counties developed by Cambridge Systematics, Inc.

[2] Texas Transportation Institute, 2003 Urban Mobility Report, Exhibit A-14, p. 76.

[3] Texas Association of Rail Passengers citation of North Central Texas Council of Governments study on traffic congestion, http://www.railspot.com/txarp/legisl8.htm.

[4] ODOT participated in a program that returned part of the federal gas tax to states without Amtrak service to reintroduce passenger rail to the state. Between June 1999 and May 2000, the federal government granted $5.2 million to support the Heartland Flyer. Daily Oklahoman, "Towns Revel in Rail World," July 6, 2000.

[5] Amtrak Government Affairs, August 2005.

[6] Derived from Amtrak's Monthly Performance Reports, "Financial Performance of Scheduled Amtrak's Routes", June 2005. www.amtrak.com/press/performancereports.html .

[7] The Chapter 3 Appendix shows the current schedules for all three Texas Amtrak trains.

[8] "Transportation Secretary Mineta lays out Amtrak Agenda", San Francisco Chronicle, December 16, 2004.

[9] DART staff, Gary Hufstedler, Senior Manager, Planning Information and Analysis, August 16, 2005.

[10] Dallas Morning News, "DART buys 70 miles of rail lines to expand options," May 23, 2001.

[11] Passed in the 75th Legislative Session (1997), Senate Bill 657 set forth the guidelines for the development and regulation of inter-municipal commuter rail districts to provide commuter rail services between certain municipalities that are located no farther than 100 miles apart.

[12] CAMPO 2025 Transportation Plan and Mobility 2025 Transportation Plan (San Antonio-Bexar County MPO). The San Antonio plan describes its treatment of commuter rail on the corridor as "an option for further consideration, but not as an endorsement of the project."

[13] TxDOT Houston US 290 Corridor Major Investment Study, January 2003. ftp://ftp.dot.state.tx.us/pub/txdot-info/hou/us_290_final.pdf.

[14] Figures are for 1999, provided by the Metropolitan Transit Authority of Harris County.

[15] Jim Archer, Manager of Service Evaluation, Houston Metro, August 2005.

[16] Houston Metro, Metro Solutions, Phase 2 Implementation Plan.

[17] Charles River Associates, Inc., "Independent Ridership and Passenger Revenue Projections for the Texas TGV Corporation Higher speed Rail System in Texas," September 1993. Rail ridership forecast based on scenario that encompasses broadest range of high-speed rail service options (e.g., connecting services to airlines at DFW International Airport and stops in university cities, Waco and Bryan-College Station.

[18] This conclusion is based on Amtrak's own experience with introducing high-speed passenger rail services in other densely populated parts of the country such as the Northeast Corridor. Even moderate improvements, such as the introduction of the Acela Regional (this included electrification and the refurbishment of rolling stock prior to the introduction of the Acela Express which uses new rolling stock on the same route) between New York and Boston resulted in dramatic ridership gains. The Acela Regional recorded a 55 percent jump in ridership in February 2000 compared to the figures posted by the non-improved Northeast Direct service in February 1999.

[19] With the provision of frequent, fast service between Washington and Boston (a corridor with roughly twice as many people as the state of Texas), Amtrak attracted 12.9 million riders on its Northeast service in 2000. This is by far the most successful Amtrak operation in the country. Rail is a legitimate option for travelers along this corridor because it is competitive with other modes in cost, frequency, and time.

[20] Interview with Amtrak official and General Accounting Office, "Intercity Passenger Rail: Outlook for Improving Amtrak's Financial Health," March, 1998.

[21] 2004 ridership figure is for DART's 2004 fiscal year, October 1, 2003 through September 30, 2004. Source: DART Monthly Ridership Reports, Planning Information and Analysis.

[22] Interview conducted by Cambridge Systematics with Carter & Burgess official.

[23] Interview conducted by Cambridge Systematics with a National Association of Railroad Passengers official.

[24] On Amtrak's Heartland Flyer, maximum train speeds are lower in Texas than they are in neighboring Oklahoma due to track conditions. The maximum speed on the Heartland Flyer is 60 mph in Oklahoma, but speeds do not exceed 55 mph along the Texas portion of the route.

4.0 – Rail Safety

The rail system in Texas is comprised of national, regional, and local railroads that may vary greatly in the types of cargo hauled, operating speeds, condition of equipment and infrastructure, and their frequency of operation. The transport of hazardous materials by rail and the reliability of railroad infrastructure are certainly of major concern, but the condition of equipment and operating practices also have a significant impact on the safety of the railroad system; both for railroad companies and employees, as well as the general public. The intent of the Texas Rail System Plan's safety programs is to address the safety issues presented by these systems as demands on the State's transportation network evolve and as new railroad operating conditions arise.

In order to promote transportation safety, both federal and state laws are in place to regulate railroad operations. Both the Federal Railroad Administration (FRA) and the Research and Special Programs Administration (RSPA) of the U.S. Department of Transportation (DOT) have established federal regulations pertaining to rail safety. These rules set standards that must be observed by all railroads dealing with the interchange of railroad cars and equipment and all passenger-carrying railroads (excluding light-rail facilities). The state's rules on rail safety were previously under the jurisdiction of the Texas Railroad Commission (RRC), but were transferred to TxDOT by the 79th Texas Legislature.

4.1 – History of Rail Safety Programs

In order to understand the importance of rail safety legislation, inspection, and enforcement, it is necessary to review the state of railroad safety that lead to congress enacting federal regulations. Railroad transport of people and goods had become an important factor in the economic development of America by the 1850's. The railroads were building and expanding at a frantic pace by the late 1860's, with the continent spanned by steel rails and the importance of rail transportation increasing. During this period, the safety of the railroad system and equipment was often minimized as the railroads sought increased profits and additional expansion. Not surprisingly, the number of deaths and injuries to railroad employees and passengers soared due to these factors.

By 1970, Congress became convinced that there was a need for further legislation to improve the safety of the nation's railroads, and passed the Federal Railroad Safety Act of 1970. The bill gave FRA specific authority over all rail safety related matters and authorized the FRA to establish civil penalties for each violation of the regulations issued under the Act. Subsequent legislation passed during recent years has increased the

FRA's regulatory authority, as well as clarifying some issues such as limiting the hours of service of certain employees, and specifying the amount of time they must be off before their next tour of duty. The passage of the 1970 Act provided the railroad safety program with a new and fundamentally different charter, which included:

- broad regulatory authority to address all areas of railroad safety;
- strong emphasis on national uniformity of safety standards;
- effective sanctions, including the ability to address emergency situations; and,
- state participation in enforcement of National standards.

4.2 - Texas' Rail Safety Program

In September 1983, the 68th Texas Legislature authorized the RRC to implement a railroad safety program in conjunction with the Federal Railroad Administration (FRA). As a result of the legislature's action, Texas now has one of the largest state rail safety programs in the nation. The 79th Texas Legislature transferred the program to the Texas Department of Transportation (TxDOT), effective October 1, 2005.

The rail safety program is primarily concerned with the enforcement of state and federal rail safety standards for track, locomotives, freight cars, signal and train controls, operating practices of employees, and the transportation of hazardous materials. The state program must comply with the requirements of the "State Safety Participation Regulations" in order to participate with FRA in the enforcement of federal standards.

A rail safety inspector is qualified in one of the following safety disciplines:

- track;
- motive power & equipment (MP&E);
- operating practices (OP);
- signals & train controls (STC); or,
- hazardous materials (HazMat).

Complaints and Accident Response

Complaints alleging unsafe conditions or non-compliance with safety standards are investigated and appropriate corrective action by the carrier is required when necessary. The rail safety inspector also investigates accidents to determine probable cause and whether safety regulations were violated. Investigation for probable cause is important because a series of accidents may occur due to a defective equipment component or improper operating or maintenance procedures. When such accident trends are observed, carriers must be notified so that the defective equipment can be recalled or the unsafe operating or maintenance procedure can be eliminated.

Statistics show that there were seven fatalities involving railroad equipment and 143 injuries between 1998 and 2003 in Texas, and 1,843 reportable collisions and accidents in the

same period; not counting highway-rail grade crossing accidents for any of these statistics. The collisions and accidents resulting in damage to rail equipment and track that exceeded $150 million. Information relating to grade crossing safety and statistics is included later in this chapter.

State Regulation of Rail Operations

Texas has adopted federal safety standards relating to railroad track, equipment, operating practices, signals and train control. State regulations prescribe standards for the horizontal and vertical clearance of structures over and alongside railway tracks, and include exemptions for certain rail-related structures. Monthly reports of excess service that are required by federal regulations must also be submitted to TxDOT. This filing must include any amendments to a railroad's operational tests and inspections, as well as copies of programs for employee instruction. Regulations also require railroads to file and maintain a map, list, or chart that indicated the location of wayside detectors in Texas.

Railroads are required to report to TxDOT, by telephone or fax, any accidents or incidents that meet certain criteria, such as any incident or occurrence involving railroad on-track equipment which results in the death of any railroad passenger or railroad employee. State rail safety inspectors or FRA inspectors investigate these accidents to determine cause and to make recommendations for preventing a reoccurrence.

4.3 - Hazardous Materials Transportation Safety

Railroads are required to comply with federal and state regulations regarding safety and hazardous materials handling and reporting requirements

Regulations and Oversight

As part of the U.S. Department of Transportation Research and Special Programs Administration, the Office of Hazardous Materials Safety coordinates a national safety program for the transport of all hazardous materials. This office is required by law to respond to all recommendations issued by the National Transportation Safety Board (NTSB). Examples of past NTSB recommendations that have been investigated by the Research and Special Programs Administration include the development of:

- inspection criteria that address the deterioration of pressure relief valves in tank cars;
- testing and inspection protocol for the detection of cracks in tank cars; and,
- hazardous material incident reporting standards.

Also, the FRA Office of Safety Assurance and Compliance is granted authority by the U.S. Secretary of Transportation to administer a safety regulatory program that focuses

on the transport of hazardous materials. This program is administered through the FRA's Hazardous Materials Division and includes programs such as the Hazardous Materials Incident Reduction Program and the Spent Nuclear Fuel and High-Level Nuclear Waste Program.

At the state level, TxDOT's rail safety program is tasked with collecting information on the transport of hazardous materials by rail in the state and uses this information to optimize the allocation of inspection resources. As with railroad operational safety issues (i.e., track, signal and train control, motive power and equipment, and operating practices), state and FRA safety inspectors monitor the compliance of railroads with federal regulations on the transport of hazardous materials by conducting site investigations.

4.4 – Highway-Rail Grade Crossing Safety

The United States transportation network contains over 140,000 miles of railroad track and 246,601 highway-rail grade crossings, equating to a ratio of 1.72 grade crossings per route mile of track. It is estimated that only 28 percent of all grade crossings have active warning devices, such as automatic gates, flashing lights, or rail-linked highway traffic signals, where these facilities intersect. These conditions contributed to 327 grade crossing fatalities in 2003 alone, which, while an unfortunate and tragic loss of life, follows a 67 percent reduction in fatalities between mid-1970 (1,000 fatalities) and 2003 (327 fatalities). During this time, the total number of grade crossing accidents also declined from 13,000 to 2,926, nationwide due to the increased number of grade crossing warning device installations, reduction in the number of crossings, and public awareness efforts.

Active warning devices comprise only 28 percent (68,834 devices) of the 246,601 highway-rail grade crossings that exist throughout the U.S. Even though the installation of active warning devices has reduced grade crossing accidents, approximately 49 percent of these incidents still occur at crossings with warning systems in place. National statistics describe the greatest number of these accidents as being the result of motorists driving around lowered crossing gates, suggesting that current public awareness programs, such as Operation Lifesaver and the Highway Safety Council, have had limited success in educating drivers.

Federal Grade Crossing Rules and Regulatory Authority

Federal regulations pertaining to railroad safety are described in Title 49 CFR, Subtitle B, Chapter II. Railroad companies must submit a record of all highway-rail grade crossing accidents to the FRA within 30 days of occurrence, as required in 49 CFR, Part 225. Highway-rail grade crossing accidents must be reported by the railroad regardless

of the extent of damages or whether a casualty occurred. If death or injury from such an accident does occur, then the accident must be filed on Form FRA F 6180.55a.

The FRA regulates grade crossing signal system safety in 49 CFR, Part 234. This part prescribes minimum maintenance, inspection, and testing standards for warning systems at highway-rail grade crossings, and defines standards for reporting and taking action on system failures.

Highway-Rail Grade Crossings in Texas

Statistics released by the RRC show a marked decline in the number of grade crossing collisions and injuries occurring in the state between 1980 and 2002 even though the population has grown from 14.2 million to over 21 million during this same period.

One of the intentions of the Texas Rail System Plan is to set a goal of continuously improving the safety and efficiency of traffic movement across the state's 17,187 grade crossings. This is to be done by addressing issues that should be incorporated into the planning efforts of state agencies, and that can be submitted as part of the solicitation of federal funding instruments as they become available. Significant efforts have been made in Texas to provide grade separations at highway-rail intersections, and to provide safe grade crossings for motorists when this is not possible. Table 4.1 ranks the numbers of both passive and active warning devices used at highway-rail grade crossings in Texas. The numbers in this table indicate that 47 percent (5,257 devices) of the 11,236 public crossings are equipped with active warning devices.

Table 4.1 Number of At-Grade Warning Devices in Texas

Warning Device	Number
Crossbucks (passive)	5,244
Lights Only (active)	1,362
Gates (active)	3,728
Stop Signs	270
Special Warning	93
Highway Traffic Signal (active)	74
Other (passive or active)	7
Unknown	458
Total	11,236

Source: *Texas-United States Grade Crossing Statistics*, Railroad Commission of Texas, 2003.

Texas has more than 10,354 miles of rail track and 301,796 miles of roadway and, according to RRC statistics, is the leader among states in numbers of at-grade rail

crossings. Table 4.2 lists 2003 statistics that shows 7 percent of all U.S. public grade crossings and 6 percent of all U.S. private grade crossings are located in Texas.

Table 4.2 Number of At-Grade Highway-Rail Grade Crossings: 2002

Type of Crossing	U.S.	Texas	% of the U.S.
Public	150,744	11,236	7
Private	95,857	5,951	6
Total Crossings, Public and Private	246,601	17,187	7

Source: *Texas-United States Grade Crossing Statistics*, Railroad Commission of Texas, 2003

Table 4.3 shows that over 11 percent (36 fatalities) of the 327 U.S. grade crossing fatalities in 2003 occurred in Texas, ranking Texas second among all states in this category. Furthermore, the state ranked first among all states in highway-rail grade crossing injuries in 2003. Texas held similar rankings for pedestrian fatalities and pedestrian injuries at grade crossings in 2003.

Table 4.3 Grade Crossing and Trespass Accidents/ Incidents in Texas, 2003

Category	Number	State Ranking
Highway-Rail Grade Crossing Fatalities	36	1
Highway-Rail Grade Crossing Injuries	106	1
Pedestrian Trespass Fatalities	51	2
Pedestrian Trespass Injuries	53	1

Source: *Statistics and Reports,* published by the Operation Lifesaver program.

Grade Crossing Accidents

Grade crossing safety was substantially improved in Texas' between 1990 and 2003. Reductions in collisions, fatalities, and injuries at highway-rail grade crossings occurred despite a growth in population, vehicular traffic, and rail traffic throughout the state. The total number of collisions, fatalities, and injuries occurring between 1997 and 2003 for TxDOT districts is shown in Table 4.4.

Table 4.4 Total Texas Highway-Rail Grade Crossing Incidents by TxDOT District (1997 - 2003)

District	Collisions	Fatalities	Injuries
Abilene	20	1	3
Amarillo	70	14	16
Atlanta	107	23	43
Austin	73	9	33
Beaumont	180	9	71
Brownwood	27	3	8
Bryan	133	18	61
Childress	9	2	5
Corpus Christi	114	7	31
Dallas	286	27	78
El Paso	68	20	27
Fort Worth	208	13	70
Houston	504	41	171
Laredo	98	2	36
Lubbock	114	21	40
Lufkin	54	7	27
Odessa	44	11	17
Paris	81	4	29
Pharr	122	5	58
San Angelo	4	0	1
San Antonio	140	25	69
Tyler	80	14	31
Waco	90	18	34
Wichita Falls	42	4	10
Yoakum	86	7	55
Total for All Texas Counties	2,753	305	1,025

Source: *FRA Crash Database*, Texas Department of Transportation, Traffic Operations Division.

Safety Improvements to Grade Crossings in Texas

TxDOT is charged with administering all federal and state funds designated to build overpass bridge structures, install or maintain active warning devices, replank grade crossings, or to implement other measures that improve grade crossing safety. For

example, funds distributed by TxDOT as part of the Obligated Federal Railroad Signal Program are listed in Table 4.5 - expenditures through 2006 from this source are listed in Table 4.6. At an average of slightly more than $29 million, these funds cover roughly 3 percent of the estimated needs to improve crossings statewide[1].

Table 4.5 Federal Railroad Signal Program Funds & Projects in Texas (1997 – 2001)

Year	Number of Projects	Amount (millions)
2001	173	$ 31.37
1999 – 2000[2]	227	$ 38.23
1998	147	$ 22.22
1997	105	$ 19.11

Source: Texas Department of Transportation, Traffic Operations Division

Table 4.6 Federal Railroad Signal Program Funds in Texas

Program Year	Authorized Amount (millions)
2002	$ 25.83
2003	$ 25.83
2004	$ 25.12
2005	$ 38.50
2006	$ 30.60

Source: Texas Department of Transportation, Traffic Operations Division

The average annual expenditure per crossing project between 1997 and 2001 was $170,138. With over 5,000 crossings in the state equipped with only signs to warn motorists they are approaching a grade crossing and must yield to train traffic, it would cost an estimated $850 million to upgrade these crossings with flashing lights and gates.[3]

In addition, Section 1103 (c) funds are available for grade crossing studies and improvements in Federally designated high-speed rail corridors. Section 130 permits up to 50 percent of the available Railroad Crossing Protection (RXP) and Railroad Crossing Hazard Elimination (RXH) safety set-aside funds to be allocated to other than railroad signal upgrade projects. The Commission has, however, elected to allocate the entire Section 130 set-aside to railroad signal upgrade projects, and has supplemented the set-aside with additional optional Surface Transportation Program (STP) safety funds. Under SAFETEA-LU (FY'04 – '09), Texas will average approximately $30.6 million per

year in STP optional safety funds for the railroad crossing safety improvement program, which is a $5 million per year increase over the TEA-21 an annual total allocation of $25.6 million per year.

When developing projects under the Section 130 program, the diagnostic team must first consider if the opportunity exists to consolidate and close redundant, non-essential crossings, either at the selected crossing or at adjacent crossings. The program provides financial incentives to the local governmental entity by providing funds to make operational improvements to facilitate the crossing closure.

TxDOT uses a federally required priority index to select candidates for these improvements, which considers:

- average daily vehicle traffic;
- average daily school bus traffic;
- average daily train traffic;
- maximum speed of trains;
- existing type of warning device; and,
- the past 5 years of auto/train accidents.

Current efforts to improve highway-rail grade crossing safety include modifications by TxDOT to existing facilities, and the implementation of new safety measures by state and municipal authorities. These strategies are discussed in the following sections.

Crossing Surfaces - A review of grade crossing accident history indicates that “Rough (Humped) Crossings” are a contributing factor to grade crossing incidents. TxDOT’s safety enhancement program includes funding for “replanking” the crossing area over ties to eliminate humped crossing surfaces, and improve crossing approaches by repairing potholes in the crossing to provide a smooth flow of vehicles over the track.

Highway Median Barriers – The review of grade crossing accidents indicates many motorists involved in these accidents are attempting to drive around warning gates. TxDOT considers the construction of highway median barriers at grade crossings, which generally requires highway widening, as a proposed method of addressing this problem. Median barriers generally require highway expansion to accommodate the reduction of right of way caused by installation of the median barrier.

Grade Crossing Consolidation - Under TxDOT’s safety enhancement program, traffic patterns are reviewed to determine which grade crossings may be closed while minimizing any inconvenience to local communities. Crossing consolidation and closure often encounters resistance from local communities that are resistant to the inconvenience caused by traffic rerouting. These closures usually require modifications to the existing roadway.

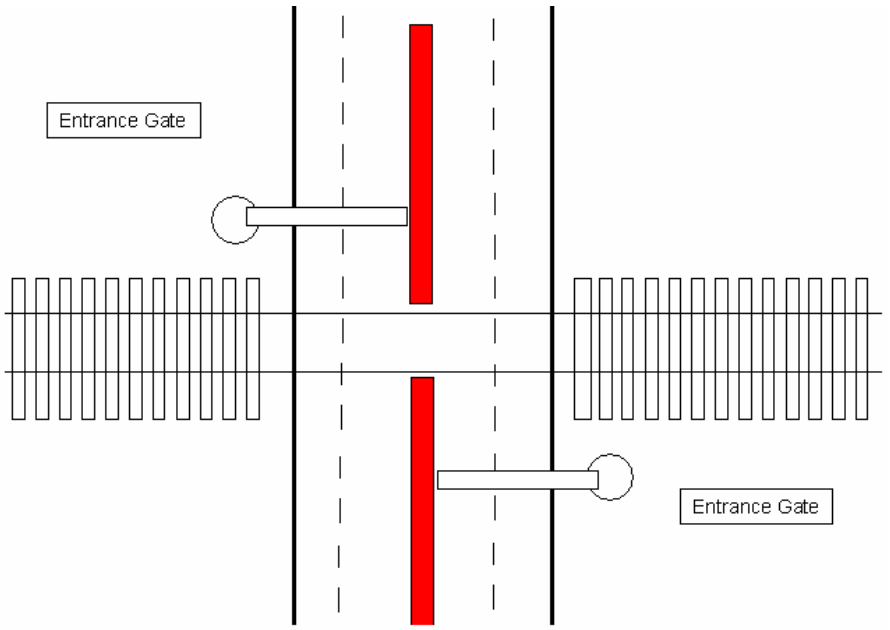
Grade Crossing Signal Upgrades - TxDOT upgrades grade crossing signalization as part of the safety enhancement program, which includes the installation of flashing lights or gates at crossings only equipped with crossbucks, and the installation of gates at crossings only equipped with flashing lights.

Implementation of New Safety Measures

In addition to the modification of existing facilities, several new safety measures have begun to be implemented or are under consideration throughout the State. These new approaches are:

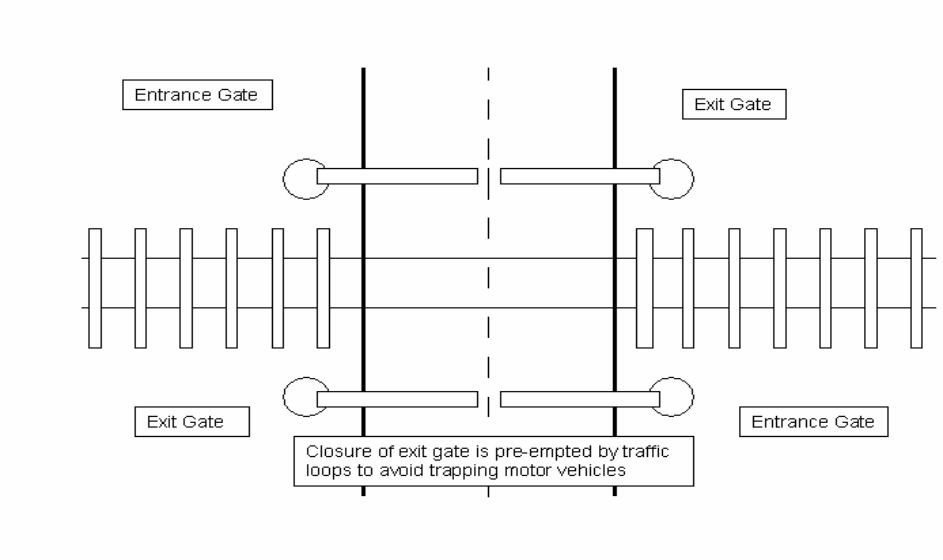
Median Barrier Protection - Median barriers are constructed in the center of highway right-of-ways to prevent vehicles from crossing the centerline in order to drive around highway-rail crossing gates (see Fig 4.1). These barriers generally require highway expansion to accommodate the reduction in right-of-way caused by installation of the median barrier. In addition, median barriers need to be at least 60 feet long in order to serve as an effective deterrent, although 100 feet is preferred.

Fig. 4.1 – Highway-Rail Crossing Median Barriers



Four Quadrant Gate Systems - This system would prevent vehicles from going around lowered crossing gates and intruding onto the track (Fig. 4.2). Local entities should review physical conditions for installation of four-quadrant gate systems in coordination with TxDOT.

Fig. 4.2. Four Quadrant Gate System



Features of the four-quadrant gate system include:

- gate timing should be customized by location, based upon the specific characteristics of the crossing (i.e. number of tracks, skew angle, average daily traffic, etc.);
- radio links to the system's event record for the highway-rail grade crossing control points can improve safety and minimize response time in the event of malfunctions; and,
- traffic loops can be installed to preempt closing of the exit gates under standard delay times from crossing activation.

Sealed Corridors – A sealed corridor is created by modifying highway-rail crossings in such a manner that no vehicular traffic can intrude upon any crossing in the corridor during train operations. This is accomplished by installing median barriers or four-

quadrant gates at all active crossings, and eliminating as many crossings as possible. This system prevents accidents from occurring and increases train speeds in the corridor.

Installation of Reflector Systems **–** Texas regulations authorize the upgrade of existing passive warning systems to high intensity reflectorized systems of crossbucks and track signs. These systems are for use at all grade crossing locations that do not have train activated warning devices, and consist of reflectorized material placed on both sides of the crossbuck support pole. In addition to improving crossbuck visibility, trains passing through these grade crossings at night provide a "flicker" effect from motorists' headlights due to their position and spacing relative to the reflectors. This effect helps to notify motorists of passing trains. TxDOT and local entities are considering a program that would reflectorize all non-train activated public crossings. Railroad carriers are also encouraged to implement similar programs on private crossings.

Crossing Horns - Crossing horns are mounted on a signal mast at grade crossings, with the warning sound directed along the roadway and toward vehicular traffic. A signal along these rail lines notifies the locomotive engineer in an approaching train that a crossing horn is active; permitting the engineer to avoid sounding the locomotive horn. This system reduces the disturbance of trains passing through grade crossings to area residents while improving safety. There are approximately 35 such systems currently in place throughout the United States, while additional installations await FRA approval. An installation of this type of system requires a cooperative agreement between the railroad and the local community.

4.5 - Public Information Campaigns

In order to supplement the effects of improving highway-rail grade crossing safety through facility upgrades and vehicle warning systems, information campaigns are in place to educate drivers on the safe operation of roadway vehicles at these crossings. Statewide educational efforts that are currently in place are discussed in the sections that follow.

Public Awareness

Literature from organizations such as Operation Lifesaver is currently being used to notify the trucking industry, industrial parks, marinas, etc. of the potential for being stuck on rough and uneven crossings, and videos/commercials are being used as visual aids to publicize the dangers of highway-rail grade crossings. Railroad operators also participate in other public awareness programs such as "officer on the train." In this program, law enforcement officers ride the train with railroad personnel and observe the actions of motorists at crossings. Another officer may be stationed nearby to respond to radio advisories of unsafe acts on the part of motorists. This program helps law enforcement personnel better understand the behavior of motorists at grade crossings.

Operation Lifesaver

Operation Lifesaver is a non-profit organization dedicated to reducing the number of collisions, deaths, and injuries at rail-highway intersections and on railroad rights-of-way through public awareness campaigns and programs that emphasize improved engineering, education and enforcement. The program seeks to improve driver and pedestrian behavior at rail-highway intersections by encouraging compliance with traffic laws relating to crossing signs and signals. Operation Lifesaver has many successful programs that emphasize the enforcement of existing traffic and trespassing laws, which are conducted in conjunction with law enforcement efforts. In addition, Operation Lifesaver supports the consolidation and closure of redundant grade crossings and seeks engineering improvements to increase rail safety.

State Rail Safety Inspectors & Grade Crossing Safety Education

The rail safety are trained to present Operation Lifesaver to schools, driver education classes, community groups, industry audiences, and professional drivers. The RRC gave over 100 of these presentations annually when administering the rail safety program, typically reaching 2,000 to 4,000 people per year. The RRC also published *Texas Highway-Rail Grade Crossing Facts*, which is an annual compilation of vehicle-train collision data at public and private grade crossings in Texas.

Specialists in the rail safety section analyze grade crossing collision data to determine problem areas so that safety programs can be targeted toward areas with high-risk crossings. Results from these analyses are used to educate the public on the dangers of trains, and to educate law enforcement officials on the need for the strict enforcement of laws governing motor vehicle operations at grade crossings.

In general, the state's role in providing information on grade crossing safety includes:

- promote grade crossing safety through public education programs, and disseminate information on safety engineering and enforcement;
- network with state and federal agencies, municipalities, industry and other programs to increase cooperation and promote support for highway-rail grade crossing safety;
- coordinate with state and national Operation Lifesaver programs to facilitate the expansion of grade crossing safety education; and,
- develop public information resources to support grade crossing safety.

TxDOT Grade Crossing Safety Education

TxDOT, in cooperation with the Federal Highway Administration (FHWA), produced Report No. 1469-4, *Highway-Rail Grade Crossing Public Safety Education Materials*. This report, in booklet form, contains information relating to common myths of train and

crossing interactions, frequently asked questions, statistics, laws, responsibilities, warning devices, and emergencies; as well as addressing safety awareness for various age groups from kindergarten through senior citizens groups. This resource is available from TxDOT's Traffic Operations division.

[1] Based on an estimated need of $850 million to upgrade 5,000 passive crossings with signalization.

[2] 1999 & 2000 year totals combined due to integration of a new database management program during the annual planning and transition periods between the years.
[3] TxDOT, Traffic Operations Division.

5.0 – Future Directions

The purpose of this chapter is to discuss ways in which the State can address rail and intermodal transportation needs in the future in conjunction with goals and policies established by the Commission. This chapter presents the trends and issues that appear to have the most significant potential transportation impacts, and briefly discusses recommendations and possible policies for consideration by state agencies and policy makers. A number of projects that are under consideration, or that are in the planning, design, or construction phase have been included in the chapter; along with estimated costs. These projects could have a significant impact upon the railroad system of Texas if they are completed, but do not necessarily represent all the potential projects within the state. The projects included are those that TxDOT has knowledge of or involvement in at some level.

Passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and its successors, the Transportation Equity Act for the 21st Century (TEA-21) and the Safe, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU), have changed the direction of statewide transportation planning and programming. The federal government and the state of Texas now require that other alternatives to increasing highway capacity be evaluated and considered in the transportation project selection process.

5.1 - Safety

The state rail safety inspection program was transferred from the RRC to TxDOT by the 79th Legislature, effective October 1, 2005. TxDOT's role in the safety of the railroad system of Texas will therefore increase through the regulatory oversight of track, equipment, signal systems, operations, and hazardous materials movements. In addition, highway-rail grade crossing safety is a major concern of TxDOT. Examining data collected and reported by the Texas Department of Public Safety can identify current trends in highway safety performance. The TRSP reflects that there has been a decline in highway-rail grade crossing fatalities. However, the number of train/vehicle incidents would indicate that a need remains to promote stronger public awareness through community groups, public meetings, modification of protection systems, and closer coordination with metropolitan planning organizations. Safety issues are discussed in more detail in Chapter 4 of this plan.

5.2 - Metropolitan Planning Organizations

Metropolitan Planning Organizations (MPOs), normally composed of representatives of local governments, citizen's advisory groups and transportation providers, are charged by state and federal law to plan for transportation facilities and services within their urban areas. The plans for transportation facilities and services within the metropolitan areas were to be developed in association with established federal planning requirements. This was to ensure that national as well as local objectives were met when developing long-range plans and transportation improvement programs. These planning requirements were reemphasized within TEA-21 and SAFETEA-LU, incorporating equal consideration of public transportation alternatives for both freight and passenger movement, including railroads. Further, the project selection and decision-making process has been decentralized. Until ISTEA, metropolitan transportation planning did not adequately address goods movement issues or include the "needs" of railroads and other freight interests. Successive transportation reauthorization bills have provided the motivation to develop a more cooperative process between TxDOT, MPO's, and the private sector in planning for rail transportation of both passengers and freight. The MPO planning process requires the development and adoption of a long-range metropolitan transportation plan for each urban area, prioritization of transportation projects in the plan, and that specific funding sources and dollar amounts be identified from known, available revenues. These prioritized projects are contained in the Transportation Improvement Program (TIP) adopted by each MPO and forwarded to the state for inclusion in its State Transportation Improvement Program (STIP).

Recently, the significance of freight/goods movement has seen increasing prominence in state, regional and local transportation planning. In the process of improving the TRSP, TxDOT will work closely with regional MPOs because federal regulations stipulate that all programs and projects utilizing federal funds, including those that would benefit freight carriers, must be included in each MPO's TIP and the STIP that covers the ensuing three years. The forecast of freight commodity flows through Texas predicts a drastic increase in vehicle miles traveled and increases in freight as a percentage of total traffic flows. Based on this prediction, it would be sensible for TxDOT districts and the state's MPOs to closely coordinate with local rail carriers, ports, and trucking companies to manage and cooperatively participate in the development of intermodal transportation facilities within each metropolitan area.

5.3 - Economic Considerations

Transportation and economic development are closely related. Economic development stimulates transportation demand by creating new jobs, new businesses, and business expansions. An efficient transportation system is also critically important to the economic vitality of Texas. Policies and programs that encourage the continued successful operation of the freight and passenger rail transportation modes in Texas will benefit the economic vitality of the state.

In many rural areas of the state, the agricultural sector remains the predominant economic influence, with the market value of agricultural products sold in the billions.[1] Many geographically dispersed producers exemplify the agricultural sector. Often unable to relocate closer to markets, these producers rely on suitable transportation facilities. Agricultural shipments are generally large and frequently transported medium to long distances, with shipping needs centering on the affordable movement of bulk commodities. The formation of Rural Rail Transportation Districts (RRTDs) in some areas has served to preserve essential rail services needed by agricultural and other rural businesses. (See Chapter 2 for additional information on RRTDs).

5.4 - The Trans Texas Corridor

Early in 2002, the Governor of Texas announced plans to move towards implementation of the "Trans Texas Corridor" (TTC) concept, a proposed statewide network of transportation routes in Texas that will incorporate existing and new highways, railways and utility corridors.

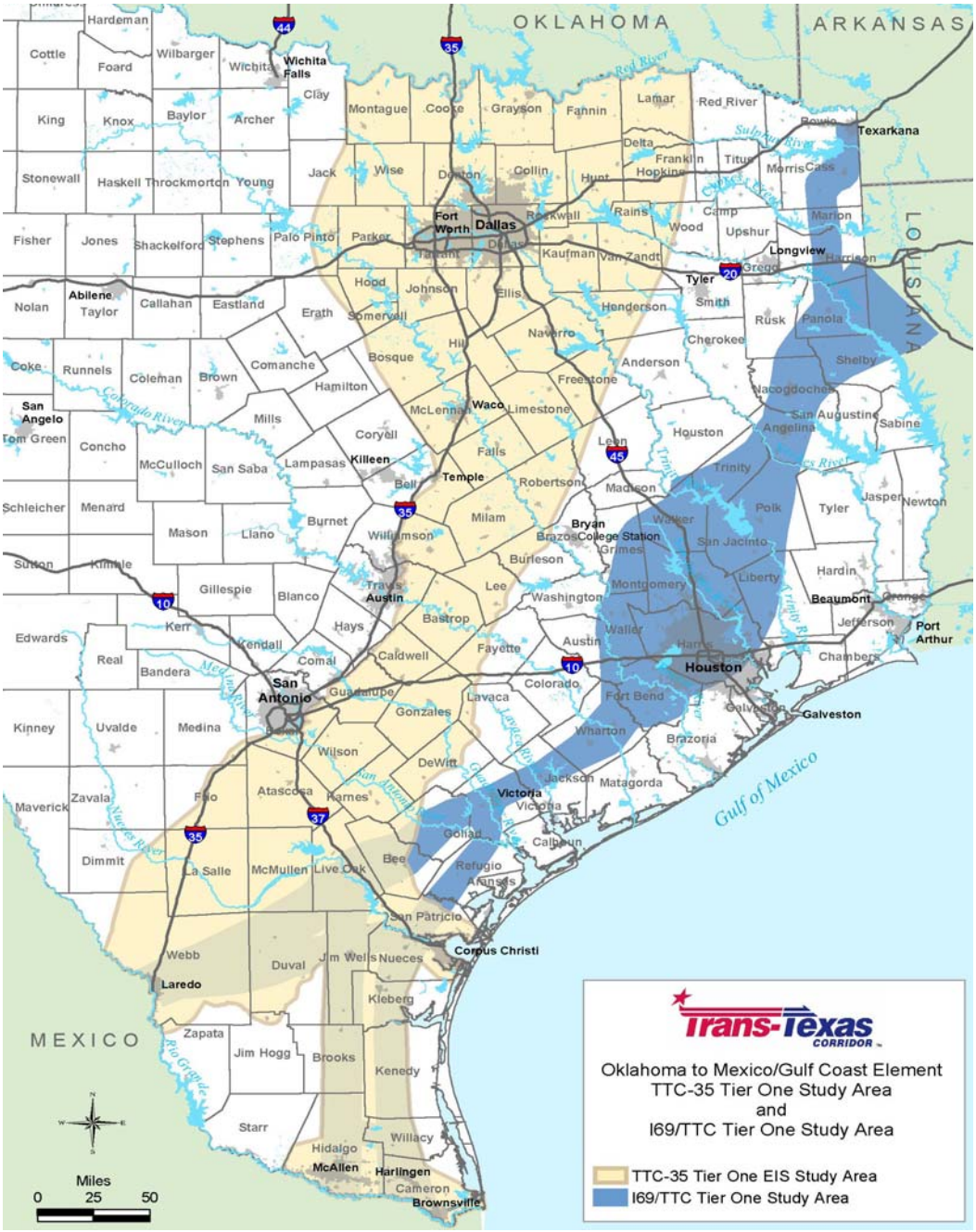
As envisioned each route may include:

- Separate lanes for passenger vehicles and large trucks;
- Freight railways;
- High Speed commuter railways; and
- Infrastructure for utilities including water lines, oil and gas pipelines, and transmission lines for electricity and broadband; and
- other telecommunication services.

Specific routes for the TTC have not been determined, but federal environmental studies and the public involvement process is being conducted on two proposed routes that would generally parallel I-35 (TTC-35) and the proposed I-69 (TTC-69) shown in Figure 5.1. Plans call for the TTC to be completed in phases with routes prioritized according to Texas' transportation needs. TxDOT will oversee planning, construction and ongoing maintenance.

TxDOT's Texas Turnpike Authority Division (TTA) has been designated as the lead office to oversee the development of the corridor routes. Developing a transportation project the size and scope of TTC will require extensive coordination and cooperation among transportation planners, state and federal agencies, MPOs, other governmental entities, private sector developers and the public. The design, financing and operation of individual elements of the TTC will remain flexible in order to maximize private sector resources, deliver projects sooner and save taxpayers money.

Fig. 5.1 Proposed TTC-35 and TTC-69



Through the Comprehensive Development Agreement procurement process, TxDOT solicited and received three detailed long range development proposals for the TTC-35.

On December 16, 2004 the Commission selected a consortium composed of Cintra, Concesiones de Infraestructures de Transporte, S.A. and Zachary Construction Corporation (Cintra-Zachary) to prepare a master development plan and master financing plan for the TTC-35 corridor and to possibly develop facilities within the corridor. Cintra-Zachary proposes to invest $6 billion to implement phased development of the corridor between Dallas and San Antonio by 2010, to pay the state $1.2 billion in concession fees that could be used for additional transportation improvements that are part of the TTC. Short and long term proposed rail components of the TTC-35 include relocating UP's through freight rail services between Austin and San Antonio, high speed passenger rail between San Antonio and Dallas and dedicated freight rail lines between Dallas and Austin. An east-west rail alignment south of the DFW region has been proposed and will be considered as part of the rail system analysis.

Development of the TTC rail components may result in that mode being separated from the highway components in certain areas. This scenario will occur if the engineering requirements for rail development are significantly incompatible with the engineering requirements for the highway systems.

5.5 - Potential Freight Rail Projects

The extensive Class I infrastructure in Texas necessitates a continual investment by the Class I railroads to maintain and upgrade their lines. Generally, rehabilitation and repair of rail lines is determined, prioritized, and performed by the line owner. Class II and III railroads face significant challenges in maintaining and upgrading their infrastructure. Many short lines were formed as the result of Class I railroads divesting themselves of marginally profitable lines. In most instances, the infrastructure has deteriorated significantly due to deferred maintenance by prior owners. The short line owner/operators generally have invested most, if not all, of their capital to acquire the facilities and have very limited resources available for line maintenance. Class I railroads are experiencing difficulty in obtaining funding to construct new rail infrastructure where needed, while most Class II and III railroads consider new construction impossible. The cost of capital is also prohibitive to major investments in existing infrastructure by the railroads, as well. These factors have contributed to a heightened awareness of the need to develop public-private partnerships for addressing rail infrastructure issues.

TxDOT has contracted an engineering firm to study freight mobility in specific regions of the state in order to access the current operations and the need for improvements to the freight transportation system, including the identification of alternative alignments where possible. These studies will aide in developing freight mobility improvement projects,

including rail freight that will help meet the needs of the transportation system in Texas. The process of developing projects from feasibility studies to construction is time consuming and includes the public involvement process as well as an involved environmental analysis of the alternatives or project.

Some of the railroad projects, in process or under consideration, in the state include:

The Brownsville Rail Relocation Project

Cameron County has been working to minimize its number of highway-rail grade crossings since 1974. The initial "Brownsville rail relocation project" involved relocating switchyards from downtown Brownsville to a rural area north of the city. The present UP mainline travels through the city of Brownsville into the border city of Matamoros, Mexico. The line includes 17 highway-rail grade crossings in Brownsville and six major grade crossings in Matamoros. Currently, Brownsville's Transportation TIP and long range plans include projects for grade separating six locations along the UP line within the city at an estimated cost of $43 million.

An alternative plan for relocating the UP route has been proposed. The "West Rail Alternative" consists of constructing a new rail line beginning at UP's junction with the new yard south of Olmito and the recently completed route to the Port of Brownsville. The Brownsville West Rail Relocation Project would provide significant safety benefits by removing the rail system from the residential areas and downtown streets of Brownsville and Matamoros, eliminating seventeen existing highway rail crossings in Brownsville, and eliminating six highway-rail crossings in Matamoros. In addition, freight train transit time from Brownsville to Monterrey would be cut by approximately two-and-a-half hours, congestion would be reduced, and a new highway corridor could be developed in the City of Brownsville.

The total cost of the West Rail Relocation Project is estimated at $24 million, a cost saving of $19 million when compared to that of constructing six grade separations along the present route.

North Cameron County Rail Relocation

Cameron County is currently developing a railroad plan for the Harlingen-San Benito urban area in north Cameron County. Four UP lines traverse the county, and the communities of Harlingen and San Benito experience significant traffic delays and safety concerns resulting from conflicts at highway-rail grade crossings in the area. To address traffic congestion and safety issues, alternatives to the present rail alignments are being considered. These include construction of grade separations at major highway-rail intersections, as well as the possible consolidation and re-routing of some rail lines.

Initial estimates to construct seven overpasses at major highway-rail intersections range from $36 million to $40 million. Construction of these overpasses would significantly reduce the number of vehicles crossing railroad lines. Two basic alignments are being studied for bypassing the cities of Harlingen and San Benito. The first alternative involves reconstructing the former Southern Pacific line, the "Brownsville Branch", from the Olmito Yard at Brownsville northward. The project would cost between $14.3 million and $56.1 million, depending upon the routing of the bypass; and would eliminate between 52 and 83 highway-rail grade crossings. The second alternative would utilize portions of UP's "Brownsville Subdivision" coupled with portions of the first alternative and would bypass San Benito, Harlingen, Rio Hondo, and Los Fresnos. The initial estimates of project costs ranges from $52.1 million to $53.6 million, and this alignment eliminates 87 highway-rail grade crossings. Cameron County continues to oversee the development of the North Cameron County Rail Plan, and the funding and associated environmental issues of the rail projects under consideration. SAFETEA-LU funding for this project falls under High Priority Project Numbers 3433 and 3448, for a total amount of $2.1 million.

Bryan/College Station Relocation

In May 2000, the Bryan/College Station MPO (BCSMPO) initiated a major investment study to identify, evaluate, and recommend a preferred rearrangement of the existing railroad tracks through the Bryan/College Station area. A UP mainline travels through both cities and the campus of Texas A&M University, causing frequent impacts to student pedestrian traffic, delays, and congestion in the area. The objectives of the study were to:

- Increase overall personal and transportation mobility;
- Reduce traffic and rail congestion;
- Improve safety;
- Reduce pollution and energy consumption;
- Consider economic, environmental, and social impacts; and,
- Be socially, environmentally, and fiscally responsible.

Initially, 23 possible alternative rail alignments were identified. Over 30 public meetings were held, and a locally preferred alternative was selected in May 2002, which would remove the railroad tracks from downtown Bryan and relocate the rail line to the west. The alignment would also provide several grade separation structures for major streets in Bryan, in College Station, and through Texas A&M University. The cities of Bryan and College Station, Texas A&M University, Brazos County, UP, and FHWA all officially endorsed the preferred alternative. Estimated costs for the project approach $100 million.

The Ingleside Project

In August 2005, the Governor presented a plan to the Pentagon to create a Navy Master Jet Base in the South Texas Coastal Bend region. The plan included a $365 million incentive package for the base, which would replace a Naval Air Station in Virginia that is being closed. The project would include building a rail spur from the UP's main line to Naval Station Ingleside to provide rail access. The estimated cost of the rail spur is $15 million.

The Victoria-Rosenberg Line

In December 2000, the Surface Transportation Board (STB) approved the Texas Mexican Railway's (TexMex) purchase of the "Rosenberg Line" from Union Pacific. This line is an 85-mile railroad line in southeastern Texas, running from Rosenberg (just south of Houston) southwest to Victoria. The line is a former Southern Pacific rail line that has not had operations for a number of years. TexMex' intention is to reconstruct the line in order to provide more efficient service from Corpus Christi to Houston. Currently, TexMex operates on its own tracks from the international bridge at Laredo to Corpus Christi. At Corpus Christi, TexMex uses trackage rights over UP through Houston, connecting with its affiliate Kansas City Southern at Beaumont, Texas. These trackage rights extend over a significant portion of UP's "Sunset Route", a busy main line. By reconstructing the Rosenberg Line, TexMex expects to restore rail service to businesses along the line, add infrastructure to the Houston-Gulf Coast region, and free useful capacity along one of UP's busiest routes. Estimated costs of this project approach $60 million.

The TexMex Mainline

In 2001, the TexMex completed the first phase of upgrades to its mainline between Laredo and Corpus Christi. This increased the speed limit along the entire line from 25 to 40 mph. TexMex then submitted an application to the FRA for a RRIF loan to fund a second phase of upgrades to the line, allowing an additional increase in track speed. FRA granted the RRIF application and TexMex is expected to begin construction soon. The estimated costs of the project are $50 million.

Houston Rail System Improvements

The greater Houston area is in the preliminary stages of TxDOT's freight movement study by the engineering consultant. This area is one of the primary economic engines for the state with its large manufacturing base. Due to the extensive infrastructure within the metropolitan area, the anticipated project costs for system improvements in Houston could easily reach into the billions. A preliminary Harris County study identified projects totaling $4.5 billion.

Port of Beaumont Rail Access

A main railroad line travels along the north side of the Port of Beaumont, from east to west. The segment of this line that is adjacent to the Port is owned by Kansas City Southern Railway (KCS). A single track, lift-bridge crosses the Neches River on this line. The interchange yard for the Port is located on the north side of the main line, while the Port is located on the south side. Cars are delivered to the interchange yard by trains moving over the main line. In order to pick up cars that have been delivered to the interchange yard, a locomotive must cross the mainline from south to north, at grade. It is difficult for a train going from the Port to the yard to get across the busy main line due to the heavy volume of traffic. Combined, BNSF and UP have approximately 50 freight trains passing over this line daily. KCS has 4 trains that cross the line near the Port. These significant traffic volumes are impacted by the single-track bridge. It has been estimated that this bridge causes an annual $1 million in train delays alone.

The Port has developed a project to address the capacity constraints on the rail system. They propose replacing the existing bridge with a new bridge that could handle trains operating at higher speeds. It is possible that the new bridge could be a double-tracked bridge, connected by new rail to the double tracked mains that approach the area. Access to the Port could be improved by adding capacity to the tracks in the Port and constructing a turnout from the main line south into the Port, making the north yard unnecessary. This project has the potential for a successful partnership between the Port, BNSF, UP, KCS, the City of Beaumont, private developers, and the State to improve access and mobility on this important freight system. The estimated total costs of the project approach $26 million. The Port of Beaumont received an $8.5 million federal grant to begin the first phase of the rail improvement project.

South Orient Rail Line

The state's initial involvement in the preservation of rail lines came about as the result of an application to abandon the old Kansas City, Mexico & Orient line (otherwise known as the "South Orient" line) by the Atchinson, Topeka, and Santa Fe (ATSF). In 1989, the Commission provided a $3 million secured grant to the South Orient Rural Rail Transportation District towards the purchase from the ATSF. In return for the grant, TxDOT received the existing right-of-way for the rail line and a security interest in the installed rails and ties. The rail district entered into a lease and operating agreement with private investors, bringing about the formation of the South Orient Railroad Company (SORC). However, by 1998 SORC filed an abandonment application with the STB. In 1999, the Texas legislature appropriated $6 million towards the $9.5 million purchase price of the rail line from SORC. After almost two years of negotiations between all parties, TxDOT entered into a $3.5 million lease and operating agreement with Texas Pacifico Transportation (TXPF), securing the balance of the purchase price. At the same time TxDOT acquired all rights, titles, and interests in the

rail line, thereby ensuring that ownership of the rail infrastructure and right-of-way would be preserved by the State.

The South Orient line, as one of only seven rail gateways between the United States and Mexico, has the potential to relieve some of the congestion at other border crossings through the diversion of rail traffic to the gateway at Presidio/Ojinaga. The 391-mile long line has had no significant rehabilitation since the early 1980s. The infrastructure contains rail manufactured between 1915 and 1966, including over 75 miles of jointed 70 pounds-per-yard rail. Current freight rail infrastructure is constructed of at least 115 pounds-per-yard rail. Increased traffic over the line would contribute to the rapid deterioration of the infrastructure, and a substantial rehabilitation program is necessary to sustain operation along the entire line. TXPF has begun the rehabilitation of the line to improve service and begin operations to the border, with an initial rehabilitation expenditure of roughly $9 million. Approximately 68,900 new ties have been purchased and installed at strategic locations on the line to enable operations along the entire length.

Through this resourceful partnership between TXPF and TxDOT, the state's ownership of this rail line prevents its abandonment and scrapping of tangible assets by an operator, protects the State's financial interests, and ensures the State of Texas' commitment in determining the future of this vital transportation corridor. In February 2004, TxDOT received a U.S. Congressional earmark in the Omnibus Transportation Act of $5.5 million for further rehabilitation of the infrastructure. TxDOT is administering the expenditure of these funds; which includes the installation of approximately 34,700 ties between Alpine and Presidio on the mainline to increase train speeds, the improvement of two grade crossings in the city of Fort Stockton, and the rehabilitation of the Fort Stockton rail yard to enable economic development there. TxDOT has identified approximately $70 million in infrastructure needs on the line, and continues oversight and monitoring of the lease agreement and operations over the line.

Blacklands Railroad – NETEX

In 1994, the Northeast Texas Rural Rail Transportation District (NETEX) formed by the counties of Franklin, Hopkins, Hunt, and Titus. Collin County joined the District in July, 2005. The initial objective was to address the impending abandonment of a rail line owned by the Southern Pacific Railroad (SP). In 1995, the legislature appropriated $2 million for NETEX to purchase 31 miles of rail line from SP, running from near the city of Greenville to west of Sulphur Springs. Through TxDOT, the state maintains a security interest in the line equal to the amount of funding appropriated by the legislature. NETEX was granted all operating rights and management of the line. NETEX purchased an additional 35 miles of track from UP in 2000, with funding provided by a $1.5 million Rural Economic Development Grant from the U.S. Department of Agriculture. The Blacklands Railroad has been contracted by NETEX to operate over the line, and has aggressively developed business with shippers. In 2001, the legislature appropriated another $300,000 to TxDOT to fund the purchase and

preservation of 23.5 miles of former SP abandoned right-of-way between Simtrott and Wylie, adjoining NETEX's current holdings. NETEX plans to secure funding in the future to rebuild the rail line on this corridor and return service between Simtrott and Wylie. NETEX has invested limited funds in track maintenance and repair of the rail line. However, the increase in traffic on the line causes serious damage to the aging infrastructure. The local governments and economic development agencies support the railroad and are working with NETEX in attempts to secure funding for the rehabilitation of the infrastructure and construction of new facilities. NETEX estimates that $7.5 million is needed to bring the line up to satisfactory condition.

Union Pacific Freight Services in the Austin-San Antonio Corridor

TxDOT is conducting a study of the feasibility of relocating UP freight operations from the Austin-San Antonio corridor to an alternative alignment east of the I-35 corridor. The existing UP rail roughly parallels I- 35, and is heavily used for freight service, running from Texas' northern border through Dallas/Fort Worth, Waco, Austin, San Antonio, and ultimately to the Texas-Mexico border at Laredo. This line carries a considerable amount of freight traffic to and from Mexico, as well as serving local industries and businesses located along the route. The number of trains operating daily over all or part of the route is between 20 to 40 trains. The objective of this relocation is to improve freight efficiencies, improve vehicular safety in the corridor, and to enable the implementation of commuter rail services between Georgetown and San Antonio.

The purpose of this Freight Rail Feasibility Study is to develop the best business case and identify the desirable rail-friendly options for relocating services from the existing Austin-San Antonio corridor on Union Pacific Railroad to an alternative alignment. The facility would be designed to accommodate a portion of UP's train traffic which currently operates on and/or over their existing Austin Subdivision between San Marcos and San Antonio. Because the rail network locally must fit into the general rail system, the study will investigate how the new freight rail corridor can be integrated into the general rail network, as it currently exists, between Hillsboro to the north, east to Flatonia and Hearne, and south through San Antonio to the Texas/Mexico border.

The study is envisioned to describe the purpose and benefits of the relocation; identifying the range of conceptual alternatives; utilizing appropriate modeling methodology to determine the operational viability of existing and conceptual routes; and including a determination of the feasibility of relocating UP mainline freight rail services from the existing alignment between San Antonio and Taylor, to an alternative alignment. The estimated costs of relocating freight rail services in the corridor are $1.8 billion.

Dallas-Fort Worth Region

In 2002 the North Central Texas Council of Governments (NCTCOG) initiated a comprehensive Regional Rail Corridor Study. The study's goal is to provide information and recommendations to decision makers on how best to expand passenger rail services in the region, such as relocating rail infrastructure at Tower 55 to an alternative alignment. The purpose of the rail relocation is to reduce congestion and improve safety by eliminating grade crossings within the metropolitan and surrounding area. A new east-west alignment immediately to the south of the region is one such option for alleviating congestion at Tower 55. A $1.6 million Planning and Engineering Study for Tower 55, funded through SAFETEA-LU, is the next step in regional work toward developing a solution. A relocation project would contribute to air quality attainment by eliminating hours of locomotive and vehicular engine idling at the rail/rail and rail/highway crossings. Freight and passenger train efficiency would also be improved by relocating the infrastructure to an alternative alignment that would support higher train speeds. The total project cost is estimated at $7.1 billion.

Laredo

Laredo has been heavily affected by the NAFTA agreement as greater annual volumes of freight come across the border. The rail system contains many at-grade crossings and yards, resulting in accidents, congestion, delays, and negative environmental impacts. Projects under consideration to address these issues include a new international rail bridge around Laredo to the west, connecting to the existing rail infrastructure somewhere north of Laredo. The project costs are estimated at $500 million.

El Paso Region

Congestion and safety issues created such significant problems between El Paso and Juarez that local authorities found it necessary to limit train operations across the border to the hours of midnight and 6 a.m. As one of only five rail gateways in Texas this has become a serious problem for the railroads trying to ship goods through this heavily used border point. Projects being considered are building a new rail bridge on the outskirts of the city or a depressed rail channel similar to the Alameda Corridor to allow the freight and vehicular traffic to move freely over a 24 hour period. Costs of the projects under consideration are estimated at $900 million.

Victoria Relocation

Over 60 at grade crossings are active in the city of Victoria, with 12 to 15 trains per day operating over them. The majority of the crossings were established in the late 1800's to early 1900's with city blocks established at approximately every 280 feet; thereby creating grade crossings every 280 feet. Rail relocation could reduce congestion and

improve safety by eliminating grade crossings within the urban area. Freight train efficiency would also be improved by relocating the infrastructure to an alternative alignment that would support higher train speeds. It's estimated this project would cost approximately $500 million.

Bonham Subdivision Rail Line Rehabilitation

The project is designed to rehabilitate the railroad infrastructure on the Bonham Subdivision, an approximately 33-mile railroad facility between Paris and Bonham, Texas. The state is in the process of purchasing the line from the Union Pacific Railroad. Operations over the line ceased in 1999 when the operator attached a $750-per-car surcharge to freight movements on the line, in order to generate revenues necessary to rehabilitate the infrastructure. The total project cost is estimated at $3.5 million.

McAllen Intermodal Project – Local interests in South Texas have developed a project to develop a regional multimodal center in McAllen. The project is designed to provide a truck to rail transfer point at McAllen, with necessary improvements to the local road system and the construction of approximately 9,000 feet of track. The estimated cost of the rail portion of the project approaches $5 million.

5.6 - Potential Passenger Rail Projects

The rail planning process may be used to assist in developing passenger rail programs throughout the state. Supporting the local development of regional passenger rail services could help relieve congestion in specific corridors. Metropolitan area and local community group's participation and support for passenger rail programs are essential. Funding could be developed through SAFETEA-LU, FRA programs, and private sector investment in the development of rail corridors.

US 90A Corridor

The Houston-Galveston Area Council (HGAC), in cooperation with TxDOT, initiated a commuter rail feasibility study along the US 90A corridor, which travels from Houston into Fort Bend County. Congestion in this corridor increased dramatically over the last eight years. The study sought to determine the feasibility of implementing commuter rail services on UP's "Sunset Route" between Houston and Rosenberg. The estimated cost range of implementing these services is between $353 and $492 million, depending on the alternative chosen.

Capital Metro Commuter Rail

The need for improved transportation in the Austin region has quickly become more pressing as the metropolitan area has experienced some of the nation's fastest

employment and population growth. This growth has led to increased congestion and environmental concerns. Capital Metro Transportation Authority developed a long-range transit plan that includes commuter rail service along 32 miles of an existing freight line that Capital Metro owns. The commuter services are initially designed to run between the Austin Convention Center and the city of Leander, with 9 stops along the route and a projected 30 minute frequency of service. The voters approved a referendum in November 2004, allowing Capital Metro to proceed with the $60 million project (This project is also covered in Chapter 3).

Fig. 5.2 Potential Rail Projects in Texas

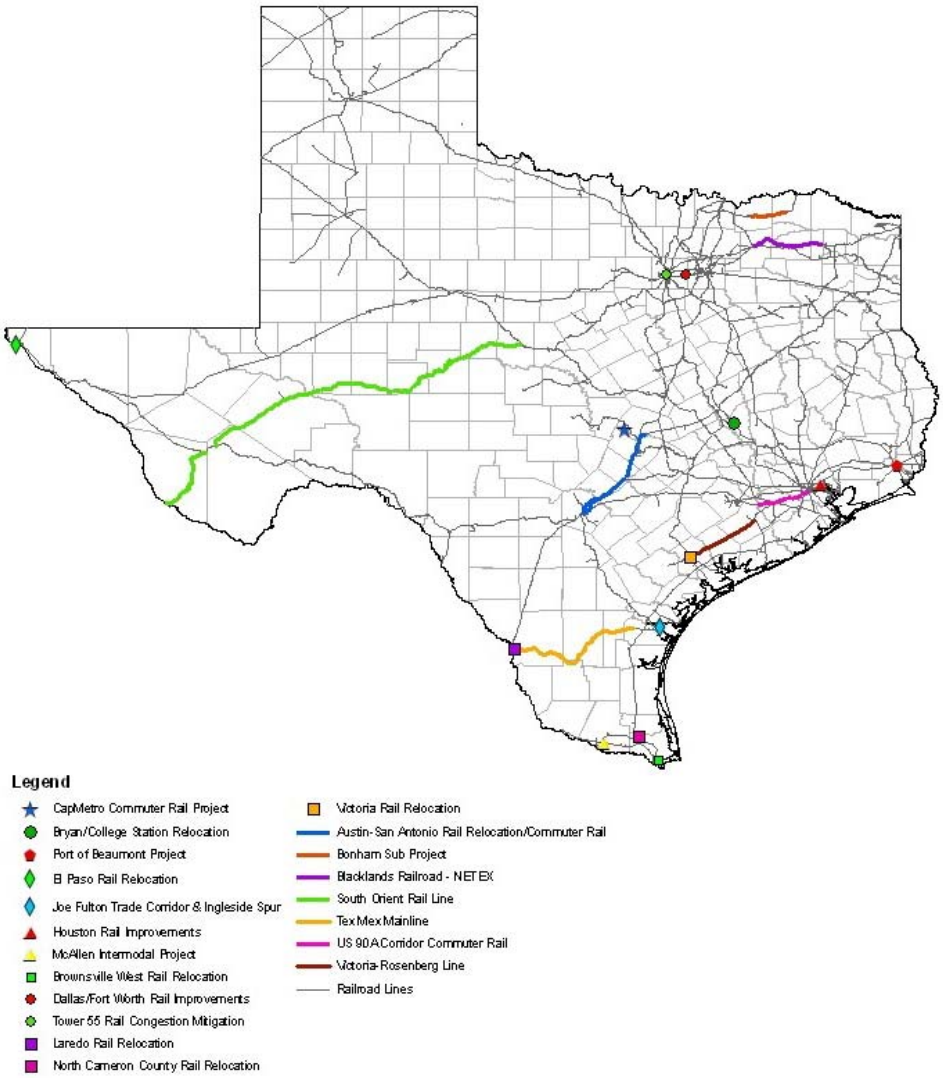


Figure 5.2 depicts major rail project areas and potential major rail project areas in the state of Texas, while Table 5.1 shows the estimated costs.

Table 5.1 Estimated Texas Rail Project Costs

Project	Estimated Cost
Austin – San Antonio Rail Relocation	$1.8 Billion
Bonham Subdivision Rehabilitation	$3.5 Million
Brownsville Rail Relocation	$24 Million
Bryan/College Station Rail Relocation	$100 Million
Cameron County Rail Relocation	$60 Million
Capital Metro Commuter Rail Services	$60 Million
Dallas/Fort Worth Rail Relocation	$7.1 Billion
El Paso Rail Relocation	$900 Million
Houston Rail System Improvements & Relocation	$4.5 Billion
Ingleside Rail Project	$15.2 Million
Laredo Rail Relocation	$500 Million
McAllen Intermodal Project	$5 Million
NETEX Rail Rehabilitation Project	$7.5 Million
Port of Beaumont Project	$26 Million
South Orient Rail Line Rehabilitation	$70 million
TexMex Rehabilitation	$50 Million
US 90A Commuter Rail Services	$353 - 492 Million
Victoria Rail Improvements & Relocation	$500 Million
Victoria – Rosenberg Rail Reconstruction	$60 Million
Total	up to $16.3 Billion

5.7 – Other Potential Rail Issues or Projects

Short line Railroads

There are over 40 Class III railroads operating in Texas, many of them on tracks that had been slated for abandonment by Class I carriers, or had suffered from deferred maintenance by those carriers before their sale. The short line owner/operators generally have invested most, if not all, of their capital to acquire the facilities and have very limited resources available for line maintenance. Major rehabilitation projects or upgrades of the railroads are generally not feasible. The increase of railcar standard load limits from 263,000 to 286,000 pounds presents a significant challenge to the short line industry. A recent study, sponsored by the American Short Line and Regional Railroad Association (ASLRRA) reveals the significant costs associated with rehabilitating these lines to 286,000 pound capacity. The planning process may be used to determine needs, prioritize projects, and identify potential funding sources.

Highway-Rail Crossing Improvements

TxDOT continues to administer highway-rail grade crossing improvement projects in Texas. The Priority Index Formula described in Chapter 4 is used annually to rank crossings and determine where funds will be spent, and what improvements are needed for each crossing identified. These ongoing projects serve to improve the safety and quality of life of the traveling public, as well as enabling rail carriers to operate more efficiently and safely.

La Entrada al Pacifico

Communities and governmental agencies in west Texas have developed a proposal for a new trade corridor between the U.S. and Mexico, the La Entrada al Pacifico (Entrance to the Pacific). The initial plans have concentrated on highway and air linkages between the two nations, but interest has arisen in adding a rail component to the proposed routes. The La Entrada al Pacifico Rail District (LEAP) was formed to address rail issues in the La Entrada Plan. LEAP is in the process of developing plans to connect the Midland-Odessa area of west Texas to the South Orient rail line. This proposed rail corridor would connect to the South Orient between Rankin and McCamey, and would enable rail freight to travel from northwest Texas and the Panhandle, over LEAP and the South Orient, to the border at Presidio.

High Speed Rail Projects

Two rail corridors in Texas have received federal designation as future high-speed rail corridors, the “South Central” and “Gulf Coast” High-Speed Rail Corridors. The high-speed rail designation from the FRA allows Texas to apply for limited federal funds to

make capital improvements to existing rail lines, thereby improving safety and mobility with the long-term goal of improving track speeds for passenger rail. The South Central High-Speed Rail Corridor (stretching from San Antonio through Dallas-Fort Worth and on to Texarkana and Little Rock on one branch, and from Dallas-Fort Worth to Tulsa on the other) essentially serves the same major cities as Amtrak's Texas Eagle and Heartland Flyer services. The Gulf Coast High-Speed Rail Corridor runs east from Houston to Beaumont, New Orleans, and Mobile, Alabama. A separate branch of the Gulf Coast High-Speed Corridor connects New Orleans with Atlanta.

In June of 2003, TxDOT partnered with the Texas High Speed Rail and Transportation Corporation (THSRTC) to request that the FRA designate an extension of the existing South Central High Speed Rail Corridor that includes an alignment to the Houston area. The proposed "Brazos Express Corridor Extension" would run from the Killeen/Temple area through Bryan-College Station to the Houston area. The extension would link the South Central Corridor with the Gulf Coast Corridor and include communities that have no current passenger services, but strongly support passenger trains and high-speed rail. The Brazos Express Corridor would also provide close linkages between HSR service and significant military facilities in the Killeen area. The cities of Bryan, College Station, Houston, Killeen, the Port of Houston, and the counties of Harris, Brazos, and Dallas joined together in a grass-roots effort to establish the THSRTC and promote the Brazos Express Corridor. The request was denied by the FRA.

The East Texas Corridor Council is a regional transportation group in Northeast Texas that formed in early 2005. Their mission is to promote funding of transportation initiatives that will provide capacity improvements to enable higher speed rail service between the Dallas-Fort Worth region, East Texas cities along I-20 and Amtrak's Texas Eagle route, and cities in and around Northern Louisiana, with long-range plans of connecting the Texas Eagle route to the Crescent Star route at Meridian, Mississippi.

[1] US Department of Agriculture, National Agricultural Statistics Service. *1997 Census of Agriculture* <http://www.nass.usda.gov/census/ (1999).

6.0 – Rail Funding

This chapter focuses on the sources of rail transportation funding potentially available to TxDOT. Forecasts for future rail, seaports, intermodal and passenger transportation development provide the basis for development of reliable financial support of long range plans.

6.1 - Federal Sources

Projections of future federal funding levels for rail transportation are difficult to predict. There is currently no source of dedicated funding for rail projects, such as a "rail trust fund" similar to the highway trust fund, but there have been recommendations by the American Association of State Highway and Transportation Officials (AASHTO) and other transportation stakeholders to establish such a fund[1]. Currently federal funding sources for rail projects are dependent upon a combination of:

- federal legislation
- receipts from federal gas taxes and other sources that feed the Highway Trust Fund
- distribution formulas
- decisions made at the federal level on project grants and legislative earmarks

Almost all federal funding for transportation projects comes from the US Department of Transportation. Within this agency, several different administrations exist that have the potential to fund rail projects out of distinct funding categories. Rail projects are most likely to be funded through the Federal Railroad Administration (FRA), the Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA).

Possible federal sources for funding rail projects include programs under previous transportation authorizations and the latest reauthorization enacted under SAFETEA-LU. The federal programs that can fund rail projects include:

- *National Highway System (NHS) Funds* – These funds can be used to improve almost any highway network link on the designated NHS to accommodate intermodal movements. Selected rail projects that are part of highway construction plans may be eligible for NHS funding.

- *Surface Transportation Program (STP)* – This program allows the use of federal funds to make highway improvements in order to accommodate a rail line, including increasing bridge clearances, upgrading crossing signals, and improving highway-rail crossing surfaces.

- *Congestion Mitigation and Air Quality (CMAQ) Improvement* – These funds are available for projects that reduce congestion and/or improve air quality. These funds are available only in those metropolitan planning areas that have been designated as federal air quality "non-attainment" areas. MPOs around the US have used these funds to upgrade rail yards, construct intermodal transfer facilities, rehabilitate branch-lines, add sidings and spur tracks, and improve bridge clearances to allow double-stack container service.

- *Transportation Infrastructure Finance and Innovation Act (TIFIA)* – This act allows the federal government to make loans and loan guarantees available for major transportation investments of national significance, including intermodal facilities. Examples of how this funding source has been used include construction of an intermodal transfer center, construction of an international airport, and expansion and refurbishment of a train station for intermodal use.

- *National Corridor Planning and Development* – This program provides funds for planning, project development, and construction of high priority corridors throughout the United States, but all funds are supplied through congressional appropriations.

- *Coordinated Border Infrastructure Program* – This is a formula program that provides funding for transportation and safety infrastructure improvements, operational improvements, and inspection improvements in border states to facilitate international trade and transportation.

- *Transportation and Community and System Preservation Pilot Program* – These funds are available to achieve locally determined goals such as improving transportation efficiency; reducing the negative impacts of transportation upon the environment; providing access to jobs, services and trade centers; reducing the need for costly future infrastructure; and revitalizing underdeveloped and brownfield sites.

- *Transportation Enhancement Program* – These funds are designated for projects that are designed to strengthen the cultural, aesthetic, and environmental aspects of the nation's intermodal system.

The funds available from these programs vary by year according to the level of funding provided by Congress and the amount of those funds that are flexible and not strictly obligated to highway projects. FHWA and FTA project the amount of funds likely to be

available in order to administer these programs in an efficient and timely basis. FHWA program and known project specific funding levels are included in SAFETEA-LU.

Rail Funding in SAFETEA-LU[2]

The current federal transportation authorization legislation, SAFETEA-LU included an important new funding tool and some modifications that may affect Texas rail projects:

- *Sec. 9001 – High Speed Rail Corridor Development*. This section reauthorized the Swift Rail Development Act (Swift Act) but made some technical amendments to the legislative language. The Act now pertains to corridor development only, removing the possibility of funding planning activities. The Act provides $100 million per year from FY 06 – FY 13. 70% will be applied to corridor development and 30% will be applied to new technology development.

- *Sec. 9002 – Capital Grants for Rail Line Relocation Projects*. This new section establishes a grant program to provide financial assistance for local rail line relocation and improvement projects. For a state to be eligible for these funds an improvement construction project must either:

    - mitigate the adverse effects of rail traffic on:

        - Safety;
        - Motor vehicle flow;
        - Community quality of life, including noise mitigation or economic development; and
        - Freight and passenger rail operations; or

    - Involve the lateral or vertical relocation of any portion of the rail line.

  The fund provides $350 M per year for FY 06 – FY 09. Eligible entities will be required to pay at least 10 percent of the project costs, which can come in the form of real property, in-kind services or previous money spent on the project before the application was filed. States may seek financial contributions from private entities that would benefit from the projects. This program is to be implemented by October 1, 2006.

- *Sec. 9003 – Rail Rehabilitation and Improvement Financing (RRIF).* This program provides loans and loan guarantees for projects such as rail relocations, acquisition, development, improvement, or rehabilitation of intermodal and rail equipment or facilities, or projects that will enhance service and capacity in the national transportation system. Changes were made to the program which had been criticized for having too many obstacles to participation. Projects are prioritized based on the following criteria:

- Included in state transportation plan(s)
- Enhance safety
- Enhance the environment
- Enhance or preserve service to small communities or rural areas
- Enhance service and capacity in the national transportation system
- Promote economic development
- Promote U.S. competitiveness

The RRIF program offers opportunities for implementing a wide variety of railroad projects and meeting some of the critical capital investment needs of the rail industry. Under the RRIF program, FRA may provide direct loans and loan guarantees. The funding may be used to:

- Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, bridges, yards, buildings and shops;
- Refinance outstanding debt incurred for the purposes listed above; and
- Develop or establish new intermodal or railroad facilities

Eligible borrowers include railroads, state and local governments, government-sponsored authorities and corporations, and joint ventures that include at least one railroad. A total of $35 billion is authorized under this program with a cap on funds available to Class I railroads of $7 billion.

Changes were also made to possible restrictions based on available collateral, and a requirement that the borrower must have been previously turned down by a private lending institution.

6.2 - State Sources

Historically, TxDOT has been limited in its ability to expend funds on rail projects without specific legislative appropriations. The 78th and 79th Texas Legislatures passed legislation that would enhance TxDOT's ability to improve transportation safety and infrastructure in Texas. Current rail funding sources permitted under HB 3588 (78th Legislature) and HB 2702 (79th Legislature) include:

- non-dedicated funds from the State Highway Fund;
- bonds secured by the Texas Mobility Fund for passenger rail projects;
- donations;
- loans from the State Infrastructure Bank (SIB);
- pass-through fares; and,
- grants or loans from the Federal Government, public or private entities.

TxDOT may also enter into comprehensive development agreements to provide for the financing, design, acquisition, construction, maintenance, or operation of a rail facility or system. Funds utilized for a specific rail facility or project will be allocated by the Commission based upon project specific eligibility or by legislative appropriations.

The major rail issues addressed by this legislation[3] are:

- TxDOT will be allowed to acquire, finance, construct, maintain and operate freight or passenger rail;
- TxDOT will administer most federal funding used on construction or maintenance of rail infrastructure[4];
- TxDOT may enter into Comprehensive Development Agreements for rail projects; and
- TxDOT may enter into agreements with public or private entities using pass-through fares for reimbursement of facility expenses.

The current focus of rail issues at the district and local level is identifying rail needs and securing funding for necessary studies. TxDOT district offices in air quality non-attainment areas can work with their local MPO to attempt to utilize CMAQ funds for local rail studies. Toll credits may also used for the local match.

At the state level, TxDOT is working to develop criteria and processes to allow the use of the Texas Mobility Fund for rail studies. Rail projects must prove a benefit to the highway system or public transit in order to utilize the Mobility Fund. Studies are necessary at all levels in order to apply for Federal funds for actual rail projects and improvements.

The 79th Texas Legislature also authorized the creation of the Railroad Relocation and Improvement Fund with passage of HB 1546, but actual funding will have to wait until the next legislative session in 2007, if Texas voters approve a constitutional amendment to create the fund and authorize financing for it. The establishment and administration of a railroad relocation and improvement fund will enable TxDOT to plan, design, and implement passenger and freight rail relocation and improvement projects that support the objectives and supporting actions of the Texas rail plan, which are listed in Table 6.1.

Table 6.1 Texas Rail System Plan Objectives and Actions

OBJECTIVES:	ACTIONS:
Reliable Mobility	• Assist local and regional efforts to expand or implement passenger rail systems as a transportation alternative.
	• Determine the benefits of utilizing rail transport to reduce Vehicular Miles Traveled (VMT).
	• Encourage public involvement in rail issues and rail system development to assure awareness of the benefits of rail transportation for goods and people.
Improved Safety	• Determine key rail corridors where through freight rail services can be relocated or improved to ensure safety of large urban populations from hazardous materials shipments.
	• Partner with communities, railroads and rail safety inspectors to ensure the safety and integrity of the rail system of Texas.
	• Emphasize public education regarding safety at rail-highway crossings.
	• Maintain, evaluate and upgrade grade crossings on the state highway system.
System Preservation	• Analyze specific freight and transportation corridors in the state to identify freight bottlenecks and determine possible multimodal alternatives that will improve freight flows.
	• Assist rail freight carriers in maintaining or improving services in specific corridors through applicable federal and state programs.
	• Encourage rail preservation by Rural Rail Transportation Districts (RRTDs) and provide evaluation, analysis, and assistance with RRTD programs.
	• Support ports, rail carriers and intermodal facilities with access and infrastructure issues wherever possible.
	• Create local awareness of rail issues and rail benefits. Work with metropolitan areas to develop rail studies, programs, and funding sources.
Economic Vitality	• Continue the development of the Trans-Texas Corridor, through coordination with other agencies as well as development of public/private partnerships to finance, build, and operate the corridor.
	• Work with railroads to evaluate, improve and expand services as appropriate.
	• Promote continued development of rail connections through monitoring and evaluating freight rail traffic flows and connectivity.

6.3 - Local Funding for Transportation

Local funding for highways contributes roughly 2 percent of the total revenues used for state highway funding in Texas. This figure does not include county and municipal expenditures on roads that are locally owned and maintained. Instead it is the amount of funding at the local level spent to assist the state with funding state and national highway projects. Local transportation dollars that are spent on rail projects are generally limited to passenger rail projects in urban areas as described in Chapter 3. The emerging increase in freight rail traffic and potential new tools in SAFETEA-LU may induce local MPOs to consider public-private partnering decisions that will direct more of their federal dollars to support rail improvement projects in the future.

6.4 - Federal Funding for Transit

FTA funding levels are determined in two ways. Formula funding plus a growth allowance for inflation. Non-formula funding, which includes the Section 5309 "New Starts" program for commuter rail and light rail transit projects, can vary greatly from year to year. Should TxDOT or a local agency have specific New Starts projects in mind, an estimate of the grant amounts approved by FTA for these projects can be used in preliminary planning.

Table 6.2 FTA Funding Categories[5]

FTA Funding Category	2004	% Change (1999 - 2004)
PLANNING ACTIVITIES - 5303/5313	$ 5,467,576	52 %
URBANIZED AREA – 5307	$195,416,711	44 %
DISCRETIONARY CAPITAL – 5309	$ 67,136,842	- 40 %
ELDERLY / DISABLED – 5310	$ 5,625,331	59 %
RURAL/NON-URBANIZED – 5311	$ 16,304,431	48 %
JOB ACCESS/REVERSE COMMUTE (began FY 99)	$ 5,457,876	120 %
TOTAL FTA Funds	$295,408,767	10 %

One of the main sources for funding passenger rail transportation continues to be the FTA. Table 6.2 provides a brief summary of the major funding categories into which the FTA divides its public transportation resources. Also included are the funds received to support Texas transit operators in 2004, as well as the percentage change by funding category over the five preceding years. In 2004, $295 million in FTA funds went to finance transit in Texas, with the most dollars ($195 million) going to urbanized areas. Overall funding from these programs has increased by an average of two percent per year since 1999. While the majority of these funds are likely to largely support continued

public transportation by bus in most parts of the state, a few areas may be able to use FTA funding as part of a plan to add or improve rail passenger options, which the FTA generally refers to as "fixed guideways." This term can mean either commuter rail running on freight tracks, light rail transit (LRT) vehicles operating in their own right-of-way or other fixed guideway options such as Bus Rapid Transit (BRT).

With the reauthorization under SAFETEA-LU, the following new transit programs were added[6]:

- Growing States and High Density States
- Small Starts
- Alternatives Analysis
- New Freedom
- Alternative Transportation in Parks and Public Lands

The rules and application criteria for these programs should be developed by FTA over the course of the next year.

Section 5307 Urbanized Area Formula Program

This program, administered by the FTA, is available to urbanized areas, although the conditions for its distribution and use vary according to the size of the area. Urbanized areas over 200,000 in population receive apportionment directly from the federal government. Funds are distributed to transit systems ("designated recipients") through each urbanized area's MPO. Apportionment to urbanized areas over 200,000 in population is based on a multi-tiered formula including:

- Population and Population Density;
- Bus Revenue Vehicle Miles;
- Fixed Guideway Revenue Vehicle Miles;
- Fixed Guideway Route miles; and
- An Incentive Tier Based on Bus/Fixed Guideway Passenger Miles and Operating Costs.

The size of an urbanized area also determines how the funds may be used. In large urbanized areas, Section 5307 funds can be used for eligible capital or preventive maintenance activities. FTA funding to small-urbanized areas, which are defined as areas 50,000 to 200,000 in population, receive an apportionment from the Governor of their state. In the State of Texas, TxDOT carries out this function through its public transportation division in Austin. Apportionment to small, urbanized areas is based upon a formula considering population and population density only. In small urbanized areas, funds may be used for eligible capital, preventive maintenance and operating purposes.

For capital projects, the Federal-matching share is 80 percent. In 2004, Texas received $195 million in Section 5307 funds.

Section 5309–Capital Investment Funds ("New Starts" Program)

SAFETEA-LU provides capital investment grants or loans through the FTA for new fixed guideway transit systems and also for extensions to existing fixed guideway systems. The categories for funding include:

- New Starts
- Fixed Guideway Modernization
- Bus and Bus Facilities
- Bus Discretionary funds

New Starts funding is generally apportioned directly to urban transit agencies. The emphases for these funds are:

- to maintain, modernize or improve fixed guideway systems;
- construct new fixed guideway projects, including the design or construction of new extensions to existing fixed guideway systems;
- to replace, rehabilitate and purchase buses and related equipment; and
- to construct bus related facilities.

Because several dozen cities around the U.S. are currently seeking funds to implement passenger rail systems, resource allocations under the New Starts program are highly competitive. FTA evaluates each project that is proposed under this program based upon the expected public benefits that it will provide and ranks its value. If a project does not rank highly, it is unlikely to receive federal funding assistance.

Section 5311 Non-Urbanized Area Formula Program

For rural counties and small cities under 50,000 in population, Section 5311 funds play an important role. Funds are apportioned by FTA directly to states, and the program is administered by state DOTs. The allocation formula is based on the state's share of the nation's non-urbanized population. Funds may be used for capital or operating purposes of transit providers in these areas.

The Federal-matching share for capital projects is currently 80 percent. In 2004, Texas received approximately $16.3 million in Section 5311 funds. Rural transit providers rarely spend large percentages of these funds to support rail transportation options.

6.12 – Near Term Funding

Funding sources available to support both freight and passenger rail projects in Texas are limited mainly to federal sources for the near-term. The private nature of most of the existing rail system has restricted the role that the state can play in improving rail transportation options, although increasing interest in public-private partnerships for the development and improvement of rail systems is rapidly advancing. The new transportation financing tools provided by the Texas Legislature should help address rail infrastructure needs and constraints in the state. In the meantime, while these new rules and procedures are developed, TxDOT can try to:

- maximize the use of federal funds as they become available for rail projects;
- develop programs which capitalize on federal funding programs by allowing easier access to these resources by Texas freight railroad companies and passenger rail systems through the provision of matching funds;
- continue a robust research program into the state's rail transportation needs;
- encourage the implementation of legislation that will increase the use of rail transportation in the state as a means to reduce highway congestion; and
- continue to work with rural rail transportation districts to preserve rail facilities that are subject to abandonment.

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[1] American Association of State Highway and Transportation Officials, "Freight Rail Bottom Line Report", September, 2002.

[2] H.R.3, SAFETEA-LU (Enrolled as Agreed to or Passed by Both House and Senate); Public Law No: 109-59, 8-10-05; http://thomas.loc.gov/cgi-bin/query/D?c109:7:./temp/~c1090ubHoC::

[3] HB 3588, 78th Texas Legislature, Regular Session and HB 2702, 79th Texas Legislature, Regular Session, www.capitol.state.tx.us

[4] "…Except as provided by Subsection (c), money appropriated or allocated by the United States for the construction and maintenance in this state of rail facilities owned by any public or private entity shall be administered by the commission and may be spent only under the supervision of the department."

[5] Derived from Federal Appropriations Tables; Texas Department of Transportation; Public Transportation Division; www.dot.state.tx.us/PTN/fedap.htm.

[6] American Public Transit Association, www.apta.com/government_affaris/washrep/2005august03.cfm.

7.0 - Conclusion

The purpose of the Texas Rail System Plan (TRSP) is to identify current and proposed rail projects, determine infrastructure and capacity needs on the Texas rail system, and develop an awareness of the issues and processes by which to address rail infrastructure needs by transportation policy makers. It should also establish a vision for the future of Texas rail transportation and provide the necessary information to guide and implement that vision. The plan identifies areas of modal improvements (freight and port rail systems and intercity and commuter rail passenger facilities) that could better serve the traveling public by improving the mobility of people and goods around the state.

Policies and programs that encourage the continued successful operation of the freight and passenger rail transportation modes in Texas will benefit the economic vitality of the state. The recent passages of House Bills 3588 and 2702 by the 78th and 79th Texas Legislatures have enabled the expenditure of funds by TxDOT for rail projects. These legislative initiatives will increase TxDOT's involvement in rail projects and the further development of the state's multimodal transportation system.

TxDOT challenge is to establish goals, performance measures, and targets that support the objectives of the Commission over a railroad transportation system that is predominantly owned, operated, and funded by the private sector. In March 2005 the Governor signed Memorandums of Understandings (MOUs) with the primary Class I railroads of Texas, the UP and the BNSF. Parts of these MOUs acknowledged that:

- Investments in the state's freight rail system could be leveraged to provide major public benefits;
- Improvements in the statewide freight rail system will offer opportunities to maximize the safety of citizens while providing increased capacity for freight;
- Some freight rail corridors could be made available for alternate uses if through freight could be relocated to new corridors; and
- Some rail relocation projects may be achieved through public-private partnerships offering opportunities to improve both the state and national freight rail system.

These agreements should assist TxDOT's statewide freight rail study efforts aimed at examining key transportation corridors whose safety and mobility might be significantly improved to:

- Relieve heavily populated urban areas of freight related gridlock;
- Possibly open corridors for passenger rail development or other modal facilities;

- Reduce or eliminate highway-rail crossing conflicts; and
- Create mutually beneficial solutions for both the public and private sectors through improved efficiencies.

By understanding the capacity and operational constraints of the existing freight systems, TxDOT can formulate a rail program that will enhance mobility and improve safety on the state transportation system. In this manner, the state should be able to facilitate regional and intercity passenger rail development and improvements.

To achieve a rail-planning document that meets the intent and spirit of SAFETEA-LU, and applicable sections of 49 CFR, the TRSP provides for an evaluation process that defines an integrated intermodal statewide rail transportation system. Improvements to the effectiveness and efficiency of the system will:

- be evaluated on a regular basis;
- focus on financial realities;
- reflect a vision formed during the Texas Transportation Plan (TTP) update's public involvement process; and,
- substantiate that the process meets State Transportation Improvement Program (STIP) planning requirements.

7.1 - Chapter Summaries

Chapter 1 lists background information on the Texas rail system, TxDOT's rail planning process and objectives and the rail program delivery methods for freight and passenger rail improvements. It describes the envisioned goals that will improve the Texas rail system, making it safer, more efficient and economically competitive. Improvements to the Texas rail system will enhance other transportation modes and improve Texan's quality of life.

Chapter 2 gives an in depth analysis of state freight rail issues and infrastructure needs. In 1980 the Staggers Act deregulated railroads, forcing railroad corporations to compete on the basis of cost as well as service. This led to a consolidation of many railroad corporations, abandonment of marginal lines, and concentration on the efficiencies of freight transport. Currently the demand for freight transportation by rail, particularly for intermodal shipments and connectivity is strong. This demand has lessened the need to abandon rail lines, and reveals an important role for railroads in future transportation projects. Opportunities now exist to develop a safer, quicker, more efficient rail system around the state with "seamless" connectivity to both domestic and international shippers and their markets.

Chapter 3 outlines Texas' passenger rail systems, describing current and proposed intercity and commuter rail services, and their connectivity with light rail operations. Although the Texas rail system expanded rapidly in the first half of the twentieth century, the rise in automobile ownership and improvement in roads and highways resulted in the decline of passenger rail across the nation. Construction of the interstate highway system and the increased use of jet aircraft accelerated this decline. While the creation of Amtrak maintained some level of service, it has not returned intercity passenger rail transport to profitability. The provision of interstate and intercity rail service has struggled with attempts to meet a standard of self-sufficiency not imposed on other public transportation systems. In the meantime, passenger rail interest in Texas has been increasing for both intercity and commuter rail initiatives. The success of passenger rail transportation in the Dallas/Fort Worth urban area has demonstrated that rail can be a viable choice for the travelling public.

Chapter 4 describes the state rail safety inspection program, highway-rail grade crossing safety statistics, and public safety issues. There are many established federal and state regulations pertaining to rail safety, that also include the regulation of hazardous materials transport and the safety of the rail infrastructure. TxDOT's recently acquired authority over the state rail safety program has consolidated all state activities in the railroad system of Texas into one agency. In addition, the vast number of highway-rail grade crossings in Texas and the interaction with and use of these facilities by the travelling public require substantial transportation safety planning and public awareness campaigns from all levels of government.

Chapter 5 shows that there are many studies and proposed projects around the state with the potential to improve both the Texas rail system and the overall transportation system. Some deal with public safety and relocating rail infrastructure that has had too much urban encroachment around it. Other projects are being planned to alleviate the state's growing pains, caused by a population growth that has outpaced the transportation infrastructure's ability to adequately service it. There are also several projects and proposals that reveal a steadily increasing interest in the rail system's ability to support new economic opportunities.

Chapter 6 discusses the potential funding sources available for rail improvements. The recent passage of House Bills 3588 and 2702 may have a significant impact on the availability of funds for rail projects in the state. Forecasts for future freight, passenger and intermodal transportation development needs indicate substantial levels of funding are necessary to implement system-wide improvements around the state.

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